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A Concentrator for Gold Ores.

The Austin (Nevada) Reveille of recent date has the following:—An intelligent gentleman of this city, has furnished us the following details of a practical system of concentrating gold ores, as employed by Mr. J. M. Beath, who had large experience in treating the ores of Grass Valley, California. Mr. Beath is the present manager of the reduction works of the Silver Peak and Red Mountain Company, where his plan has been recently adopted with every promise of substantial economy. His machine is peculiarly successful in treating both coarse and fine sulphurets, gold with oxides, and gold of such exceeding fineness that in some cases the most valuable of the concentrations are found to be in the finest slimes. In treating gold in some of these conditions the best arranged plans of amalgamation by electro-plated copper and other ways leave fully one-half of the value in free gold as well as sulphurets to be secured by concentration. To effect this, Mr. Beath employs the following process with his concentrator. The whole of the stuff discharged from the battery, after passing over the amalgamation plates, runs into a "sizing tank," which is so constructed that, by the action of the water eight different grades, ranging according to the size and gravity of the particles, from the coarsest crushed quartz to the finest slimes, are constantly discharged from it. To each of the eight different "sizes" is allotted a special part respectively of the concentrator, which is 34 feet long by 6 feet wide. These different "sizes" are divided and subdivided until the aggregate width of the whole surface occupied is 272 feet. By these subdivisions the water is expanded over this large surface until it becomes merely a thin film, which allows all the heavy particles of mineral to "deposit," and they are retained by the slow and constant raising of the frame containing the concentrating apparatus, which is effected by a kind of chronometric work connected with the machinery of the mill. In cases of gold of exceeding fineness the most valuable parts of the concentrations are found to be in the finest slimes, having passed through the entire length of the sizing tank in about twenty minutes, and being held in suspension in the quiet water during that time. From the first divisions of this machine the ore passes to a second of 34 feet surface where a lighter and coarser quality of sulphurets or gold is deposited, and from the second to a third which is still coarser. The tank containing the concentrator has a capacity of 25 tons, and occupies from six to ten days in filling according to the quality of the ores. The concentrator tank being full, the mill is stopped from three to four hours, while its contents are discharged by water into two circular tanks below of 20 feet diameter each. The coarser "sizes" go into the first tank, and the finer into the second, passing in through vertical pipes placed over the tanks, the bottoms of which are conical. The heavy particles are deposited near the centers, while the light and coarse sand (crushed quartz) is driven to the verge by the concentric waves. These circular tanks are slowly emptied one at a time, by a revolving arm distributing water, carrying the concentrated matter to an elevator, from which it passes to a machine for rewashing; this reconcentrator is similar to the concentrator already described, but is of smaller dimensions (6 feet by 8 feet); the tailings from this reconcentrator pass with the stuff from the battery to the first machine or concentrator, which saves the waste from the washing. The concentrations are taken out of the reconcentrator and their gold is extracted by the ordinary pan process, or any other economical process now in use. During the last five years Mr. Beath's concentrator has been largely adopted in the best mills of Grass Valley and other parts of California, and, as we have remarked, has lately been introduced into this state. It is simple in principle, plan, and structure, and, after seven years' demonstration of its great economical and practical merits, it justly ranks as one of the very best and most valuable machines for the extraction of gold now in use."

"To let" is becoming a prominent sign on the houses in Virginia City since the White Pine exodus.

British Methods for Testing Petroleum.

In taking the flashing points of fixed oils for the Fire Office, Professors Roscoe, Penny and Attfield employ a porcelain crucible, similar in size and shape to the test-vessel described in the British Petroleum Act, and adopt the important precaution of protecting the stem of the thermometer employed by an outer glass tube; they thus arrive at tolerably concordant results. In the eye of the British law petroleum is not petroleum if its flashing point is above 100° Fahr., and no license is necessary for its sale or storage; while all mineral spirits or oils are, legally, petroleum if their flashing point is below 100° Fahr. The following are the schedule of directions for applying the flashing test to samples of petroleum oil:—"The vessel which is to hold the oil shall be of thin sheet iron; it shall be two inches deep and two inches wide at the opening, tapering slightly towards the bottom; it shall have a flat rim, with a raised edge one quarter of an inch high round the top; it shall be suppored by this rim in a tin vessel four inches and a half deep and four and a half inches in diameter; it shall also have a thin wire stretched across the opening, which wire shall be so fixed to the edge of the vessel that it shall be a quarter of an inch above the surface of the first rim. The thermometer to be used shall have a round bulb about half an inch in diameter, and is to be graduated upon the scale of Fahrenheit, every ten degrees occupying not less than half an inch upon the scale.

"The inner vessel shall be filled with the petroleum to be tested, but care must be taken that the liquid does not cover the flat rim. The outer vessel shall be filled with cold, or nearly cold, water; a small flame shall be applied to the outer vessel, and the thermometer shall be inserted into the oil so that the bulb shall be immersed one and a half inches beneath the surface. A screen of pasteboard or wood shall be placed round the apparatus, and shall be of such dimensions as to round it about two-thirds, and to reach several inches above the level of the vessels.

"When heat has been applied to the water until the thermometer has risen to about 90° Fahr., a very small flame shall be quickly passed across the surface of the oil on a levl with the wire. If no pale blue flicker or flash is produced, the application of the flame is to be repeated for every rise of two or three degrees in the thermometer. When the flashing point has been noted, the test shall be repeated with a fresh sample of the oil, using cold, or nearly cold, water as before; withdrawing the source of heat from the outer vessel when the temprature approaches that noted in the first experiment, and applying the flame test at every rise of two degrees in the thermometer."

The Coal Fields of New Mexico.

The vast influence exerted by fuel, over the progress, enterprise and wealth of a country, renders the cheap and permanent supply of heat a matter of great importance to the rapid and permanent development of any country. On account of the vast and varied mineral resources of New Mexico, the question of coal is one of more than ordinary magnitude. Says the Santa Fe *Gazette*: "It is not to be forgotten, that in front of us for near one thousand miles broad, and two thousand miles in extent, open prairie, destitute of wood meets our gaze. The mountains of New Mexico must not only supply the timber, plank, wood and coal needed for its own use, but also the prairie in front of us for a distance of five hundred miles in length for all time to come. Can we do this, is the important question. In the rush for the discovery of rich deposits of gold and silver, the unpretending and modest mines of coal, have been passed by unnoticed and unknown. While the government has been spending its thousands annually, to explore the mineral resources of other states and territories, New Mexico—inferior to none in the variety, value and extent of her mineral resources—has been utterly neglected and forgotten. Our Legislative Assemblies have repeatedly called the attention of Congress to this subject, and our delegates have repeatedly brought the importance of this subject, to the notice of the proper committee of Congress, and nothing has yet been done outside of the private enterprise which gave to the country that valuable and interesting Report of Professors Owen and Cox: and the more recent publication of the Hon. C. P. Clever on that subject.

On entering New Mexico, to the north, in the Raton Mountains, extensive deposits of bituminous coals, are known to exist; and after passing over the mountains, into the valley of the Red River, similar extensive deposits have been discovered. At the Vermejo, twelve miles north of the residence of Mr. L. B. Maxwell, also exists veins of fine bituminous coal, more than ten feet thick, and from the appearance of the vein inexhaustible in quantity for the next half century, and destined at no distant day, to be of great value and vast importance, in supplying railroads, furnaces and manufactories, with a cheap and convenient source of fuel. We have before us a specimen from the Vermejo coal mines of Mr. Maxwell, obtained by Judge Watts during his recent visit to these mines, which appears to be of a most excellent quality, and found to be so, on actual use in the blacksmith shops at Cimmaron and Fort Union. This deposit, as above stated, is over ten feet thick, and crops out a distance of over one hundred feet, and seems to extend indefinitely into the mountains. The outcrop of the same vein, is visible, in many other places for miles distant. This extensive and valuable deposit of coal, is situated on the Vermejo Creek about five miles above the crossing of the road from Bents Fort to Fort Union. Colonel Anderson, Superintendent of the New Mexico Mining Company, at the Placer Mines, twenty-seven miles south of Santa Fe, has recently discovered a five foot vein, of the best quality of anthracite coal. The Col. has taken out about fifty tons, to use in the blacksmith shop and mill, and finds it costing not more than half the price of wood. This deposit of coal is extensive, and equal to the best anthracite coal. Near Fort Craig, on the eastern and western sides of the Rio Grande, have been discovered and opened for use, extensive beds of bituminous coal, which is used at Fort Craig for fuel, and in the blacksmith shop west of Jemes, on the road to the Nevajoe Country, is known to exist extensive beds of coal, but have never yet been opened or tested as to kind or quality. With our almost inexhaustible quantities of rich iron ore, found in all localities and in some places so pure, as to be used in the blacksmith shop, as taken up from the ground. New Mexico is destined, at no distant day, to equal, if not surpass Pennsylvania in the cheap supply of iron. Cannot our Legislative Assemblies, call the attention of Congress to this subject, in order that at least, the vast coal fields of New Mexico, may be brought before the country by the government, in such shape as will make known their extent and value."

The Coal Mines in Japan and Fermosa and Labuan.

It has long been a matter of wonder to the unitiated that such immense shipments of English coal should be necessary to the Straits and China, when plentiful supplies of the fuel were known to exist in Labuan, Fermosa and Japan. Of course the series of diasters that attended the working of the Lebuan mines, under the unlucky company now winding up, prevented any substantial benefit being derived from those extensive coal fields, and the Japanese exclusiveness for the first few years precluded the aid of foreign engineering and machinery to work the valuable mines in the vicinity of Nagasaki, so that Japan coal although plentiful enough, was but poor stuff, being all from the surface. So that for the general purposes of steam navigation in those waters, neither Labuan nor Japan coal was of any considerable value, and the demand had to be supplied almost entirely from either Great Britain or Sydney. This state of things does not seems likely to last much longer, and in view of the possible exhaustion of the English coal fields in the course of a few generations (a possibility, by the way which a year or two ago, was looked on with serious anxiety, but which has in a measure entirely

subsided) it is a good thing to know that the greatly increasing requirements of our possessions will soon be supplied from sources more easily accessible. From Lebuan we hear excellent accounts, both of increased rapidity of production and improvement of the coal, which bids fair in a short time to be quite equal to that obtained from Australia, and superior to the Formosa or other China coal. Of course we cannot say much at present as to the produce of the Chiatang mines, although an improved method of working, and proper means of transit to the coast may eventually show those mines to be even more valuable than represented. In Japan, too, laudable efforts are being made to produce a better quality of coal, and (in one case at least) with every prospect of complete success. The Takasima mines, near Nagasaki are situated on an island, known as the property of the Prince of Hizen, and have been worked in a superficial sort of way for the last ten years, producing even under these unfavorable circumstances, some 15,000 or 20,000 tons annually, of a quantity considered the best in the country, and pronounced by engineers in her Majesty's navy, after careful trials to be in most respects equal to the best Newcastle coal. The primitive system of work adopted by the natives caused the galleries to be flooded with water, and gave rise to other difficulties of so serious a nature as to result in the temporary abandonment of the mines. The Prince, however, has lately leased the island to an English firm (Messrs. Glover & Co.) for a long term of years, and a shaft is now being sunk, under the superintendence of an English engineer, upon the most approved modern principles; powerful pumping machines are also being erected, and the best coal in the island—the deepest beds, which were quite beyond the reach of the natives—will shortly be brought into the Nagasaki market. We understand that this new shaft had reached a depth of ninety feet some months ago, and the coal bed had then been reached, so that by this time the "black diamonds," have probably come to the surface in large quantities. The cost of it, as supplied to vessels at Nagasaki, will probably be about $5 per ton, and the trade will soon be a large one, and give a fresh impetus to the prosperity of Nagasaki.—*London and China Telegraph.*

The Mining Suspension in Carbondale, Pa.

We clip from the Scranton *Weekly Republican* the following items in relation to this subject.

At a recent meeting, held in Carbondale, Pennsylvania, the minumum price of Miners' and Laborers' wages (that is Miners' Laborers, taken to do a piece of work for the Company from their own job), was considered, and a motion made that Miners should not receive less than $2.75 per day, and that Laborers in the case mentioned above shall not receive less than $2.25 per day. After some discussion this question was referred, with the same instructions, to the Districts singly.

The following resolutions were adopted.

Resolved, That all inside and outside Company hands—Miners, Laborers, and Mechanics (that are governed by the same changes that we are) also drivers from 12 years and upwards be invited to join our Association, and efforts be made to have them come in without delay; and further

Resolved, That we protect our Miners and Laborers in a proper manner.

Resolved, That any inexperienced hand must serve at least two years as a Laborer in the Anthracite Coal Mines before he shall be entitled to the position of a Miner; and any Miner coming into the Anthracite Coal Field from foreign lands, upon furnishing satisfactory evidence that he has been a Miner at least two years, shall be entitled to the position of a Miner, and a place as such, provided that all the hands entitled to places already in the Mines shall be supplied with places in preference to strangers, and further

Resolved, That no man shall be considered a practical Miner until he is 21 years old, nor entitled to a position as Miner unless under the following circumstances: 1. A practical Miner may take a young man into partnership at the age of 18 years, if his father was deprived of health by accident or lost his life in the Mines; 2. That a practical Miner may take his son, in company at the age of 18 years, provided in both the above cases that the Miner must have been working two years in the Mines, and the Miners taking such minors should be held responsible for them until they reach the age of 21 years.

New Mixture for Tempering Steel.

A locksmith, of Mulhouse, named Herrenschmidt, claims to have discovered a mixture which is said to give to the commonest steel the grain and the temper of the finest cast metal, and, moreover, to have the power of bringing back the original quality of the steel which has been burnt. The mixture is composed as follows:—With 16 litres of distilled water mix one kilogramme of hydrochloric acid, 19 grammes of nitric acid at 36°, 21 grammes of sulphate of zinc, and 100 grammes of tripoli. In this mixture is to be placed a piece of cast iron of the first fusion, weighing 100 grammes; when the acid mixture has acted on the iron for 24 hours, the composition is ready for use in the ordinary way, and it remains effective until it is all used.

[The above, which we clip from the London *Mining Journal*, has been copied very extensively by our mechanical and pseudo-scientific papers. We quote it merely for the purpose of expressing our entire want of faith in the virtues claimed for the mixture therein described. No practical worker in steel that understood the character of the ingredients which enter into the above described composition could be deceived by such a recipe; but unfortunately we have many good practical men who know nothing of the chemical properties of hydrochloric acid, sulphate of zinc, tripoli and cast iron of the first fusion, and it is for their sakes that we thus enter our dissent.—ED.]

☞ A debating society had under consideration the question, "Is it wrong to cheat a lawyer?" The decision arrived at was, "No, but impossible."

MINING.*

BY ALBERT D. RICHARDSON.

GOLD AND SILVER.

Gold is the first metal of which we find historical mention. One of the streams which flowed through Eden, compassed the land of Havilah, "where there is gold." Abram "was rich in gold and silver," and his descendants on their exodus borrowed of the Egyptians so many "jewels of silver and jewels of gold" that the numerous sacred vessels of their Tabernacle, and the golden calf made by Aaron, did not exhaust the supply. Solomon used gold lavishly in the decoration of the Great Temple: and silver "the king made to be in Jerusalem as stones for abundance." The California of that day was Ophir, situate according to some authorities on the east coast Africa, where ancient mines have recently been found, and according to others, in India, that abounds in "apes, peacocks, ivory and precious stones," for all of which Ophir was famous.

Gold, sometimes associated with silver and sometimes with base metals, is usually found in quartz rock. On the decomposition of the rock it is washed down into beds of rivers, where it lies buried in grains among the sands. The Pactolus, which "ran itself in golden sands," is supposed to have witnessed some of the earliest mining. The Scythians, Egyptians, Greeks and Romans all obtained supplies of gold from mountain regions.

Before the discovery of America, the supply of gold barely met the loss caused by wearing. The annual product of the world in 1847 was said to be only twenty millions of dollars; seven years later, California alone yielded sixty millions. The discovery of the rich deposits in California and Australia gave new impetus to the movements of population everywhere, stimulated all departments of industry, brought together into the same communities people from every quarter of the globe, settled vast territories, facilitated intercourse between far distant regions, and steadily changed values throughout the world. Since the discovery of California, the purchasing power of gold and silver has probably been reduced one-half by their increased abundance.

Hand washing was the earliest mode of collecting gold; and the pan and the rocker were the first implements used in California mining. Quicksilver was soon brought in to collect the fine particles often lost in hand washing. Hydraulic mining, now largely in use in California, is done by throwing currents of water from hose and pipes with enormous force against banks of earth, cutting away whole hills. Down the face of the hill, also, pour artificial streams. At the foot of it, the waters all pass away in long flumes or wooden troughs, carrying the earth and stones with them. Slats on the bottom of the flumes catch and retain the gold. Where gold is found not in decomposed rocks or earth, but in hard quartz, the stones must be ground or pounded to powder to release it. The arastra, a Mexican invention, consists of one or more flat heavy stones, drawn round by mules, in water, over the pieces of quartz on a circular stone bed. This grinds the rock to powder, and the gold is then collected by quicksilver. The arastra is used more or less in all our mining regions, but it is a slow, laborious process. American miners usually reduce the quartz by stamp-mills. Iron weights or stamps of from four hundred to seven hundred pounds each, and falling upon the quartz from four to six feet, sometimes as often as once a second, rapidly pound it to powder. It is then ground to extreme fineness under revolving stones and quicksilver is put in to collect the gold.

Silver seems to have been abundant among ancient nations, and was, probably, the first metal used as money. Hannibal obtained 300 pounds daily from a mine in Cordova, which penetrated a mile and a half into the mountain. The famous mines of Potosi were accidentally discovered in 1545, by a hunter, who found lumps of the metal under the roots of a bush. Silver is found in a variety of ores, usually associated with gold, copper or lead. Pure masses occasionally occur in the copper region of Lake Superior. Pieces almost pure and as large as a half dollar coin have frequently been obtained in Nevada, and sometimes in Idaho. Silver is never found like gold in grains among the sand, to be washed out by hand, but in ores or quartz, from which it must be reduced by stamping or grinding, and sometimes by smelting.

It is difficult to obtain trustworthy recent estimates of the world's annual yield of the precious metals. The following, from Phillips' Gold and Silver Mining, estimates the product for 1865. It places the yield of the United States several millions too low, probably making no estimate of the large quantity never reported to the mints:—

GOLD.

Russia	$13,900,000
Austria	1,100,000
Rest of Europe	75,000
Southern Asia	5,000,000
Africa	800,000
South America and Mexico	6,800,000
California and neigboring States	42,000,000
Rest of United States	28,000
Nova Scotia	414,400
British Columbia	2,320,000
Australia	31,200,000
New Zealand	8,280,000
Total	$111,917,400

SILVER.

Russia	$ 870,000
Scandinavia	225,000
Great Britain	907,500
Hartz Mountains	420,000
Prussia	1,020,000
Saxony	1,200,000
Other German States	37,500
Austria	1,380,000
France	270,000
Italy (Isle of Sardinia)	375,000
Spain	1,650,000
British Colonies	142,500
Chili	4,485,000
Bolivia	2,040,000
Peru	4,485,000
New Granada	225,000
Brazil	22,500
Mexico	24,000,000
United States	15,000,000
Total	$58,755,000

* Extracted from advance sheets of THE AMERICAN YEAR-BOOK AND ANNUAL REGISTER FOR 1869. *Astronomical, Historical, Political, Financial, Commercial. A General View of the United States, including every department of the National and State Governments, together with a brief account of Foreign States*, etc. Edited by DAVID N. CAMP. Hartford: O. D. CASE & CO., 1869.

The report of Professor Wm. P. Blake upon productions of the Precious Metals, based upon data obtained at the Paris Exposition, estimates the world's present annual yield of bullion as follows:—

United States	$72,000,000
British America	3,000,000
Mexico	10,000,000
Central and South America	10,000,000
Australia (including New South Wales, Victoria and Queensland)	33,000,000
New Zealand	6,000,000
Russia	15,000,000
France, Austria, Saxony, Spain, Italy, Great Britain, Norway and Sweden	10,000,000
Borneo and the East Indies, China, Japan and Central Asia	10,000,000
Africa	1,000,000
Total	$171,000,000

The Commissioner of the General Land office of the United States, in his report for 1867, estimates the aggregate annual product at $208,000,000; and some other writers place it still higher.

There is no obvious reason for the relative value of gold and silver to remain the same; but it changes very little even when great changes occur in the relative product. The enormous gold yields of California and Australia have hardly affected it perceptibly. In 1844, an ounce of silver stood in value to an ounce of gold as 1 to 12 1-2; and in 1863 as 1 to 15. The whole tendency of our times is towards a uniform metallic currency all over the world, and one will probably be adopted before many years have passed.

"Where do the precious metals go?" is a question frequently asked. The drain of them has always been toward the East, where they are used for hoarding and for ornaments, rather than for money. This is especially true of silver. During 14 years, ending in 1864, England and the Mediterranean exported to Asia more than $650,000,000. The total amount of silver in the world is estimated at $10,000,000,000, or only enough to pay the debts of three or four leading nations.

The total gold and silver product of the United States from 1848 to 1868 is estimated at $1,125,000,000. The largest product of Australia in any single year was $43,000,000, considerably below the largest product of California. The yield of the precious metals is much more than sufficient to supply the loss caused by wear and tear, and they must decrease steadily in value, unless Asia increases the demand by using them more generally for currency. The annual product of the United States has fallen off somewhat since 1863, owing to the giving out of placer mines and other causes; but as the steady progress of the Pacific Railway increases the facilities for quartz mining, our yield will be augmented from year to year. The yield of Nevada, Arizona and New Mexico is nearly all silver, that of Idaho, one-third silver, that of Colorado one-eighth silver. All the rest is gold. The following is the estimated gold and silver product of the country for 1868:—

California	$23,000,000
Nevada	18,000,000
Montana	13,000,000
Idaho	7,000,000
Oregon	5,000,000
Colorado	4,000,000
Washington	1,000,000
Arizona	250,000
New Mexico	250,000
Wyoming	50,000
Total	$71,500,000

CALIFORNIA.—In California, some placer mines did well during 1868, as the season was wet and water plentiful; but in the southern counties the water was so high as to destroy a great deal of property. In one county, it stopped mining for six months. The floods reduced the product of the year. The quartz yield was steady and quiet, and there were no failures among the quartz miners. Crushers are coming into extensive use to prepare quartz for the stamps. They break it up to the size of hazel nuts, but stamps do all the pulverizing. On the whole, the mineral product remains substantially the same.

OREGON.—The Oregon mines, principally in the southern counties, did well during the year. Of their entire yield, probably $75,000 came from quartz, the remainder from placer diggings. The yield seems likely to be much larger for 1869, as extensive gold fields on the Malheur river, and Shasta and Willow creeks have recently been discovered. Several ditches are constructing which will supply water to about four thousand men.

NEVADA.—The great Comstock Lode, discovered in 1859, has yielded in all, some ninety millions of dollars, and proved to be for the time the richest silver mine in the world; but during 1868 its product greatly diminished, and only a few of the mines upon it are now doing well. In general, those which are deepest find the metal poorest. The yield of the lode fell off from seventeen millions in 1867, to twelve or thirteen millions for 1868. Central and eastern Nevada, however, show an increase, and the new White Pine district, 120 miles east of Austin, proves exceedingly rich. One of its mines, it is claimed, turned out 200 tons of ore, which *averaged* to yield over $1,000 to the ton, and though the district is only newly opened, it yielded $1,000,000 during the last six months of 1868. With the opening summer of 1869, it is likely to contain a population of many thousands, and it bids fair to more than counterbalance the falling off in the yield of the Comstock Lode.

IDAHO.—The territory contains in all, some 380 stamps. Of these, about 150 are running, nearly all in the Owyhee district. In other sections the mills are idle, chiefly from in-

experienced and incompetent management. Most of the capital which went in during 1868 was from England and our Western States. Western men seem to succeed better in quartz mining than eastern. The Flint district, adjoining the Owyhee, promises richly, and a forty stamp mill, the largest in the Territory, is nearly completed. Placer mining was less successful in 1868 than in 1867, as the season was exceedingly dry, and water scarce in the ditches. Three-fourths of the bullion produced is by quartz mining, one-fourth by placer. In the quartz the ratio of gold increases largely upon that of silver, as the mines are sunk deeper.

The barren looking, sandy soil proves much more productive than was expected. Several flour mills are in operation, and grain, fruit and vegetables already produced in abundance. Supplies go in from the Central Pacific Railroad—only 120 miles from the Owyhee district—a great improvement on the old mode of hauling them over the mountains from Oregon. The advance of the road has given a great impetus to industry and commerce in Idaho. Freights from San Francisco cost only five or six cents a pound.

MONTANA.—Quartz mills in the territory, 50; number of stamps, 668: stamps in operation, about 400. There have been the usual failure in mills, from bad judgment, inefficient or dishonest management, and the attempt to substitute for stamps, new processes which have proved impracticable. In the Hot Springs district, several promising veins have "run out," the only instances of the kind in the territory. Of the bullion yield for 1868, 95 per cent. is gold, against 5 per cent. of silver; and 80 per cent. of the gold product comes from quartz mills, against 20 per cent. from placer diggings. There are about twenty arastras in operation. All the quartz mills are the old fashioned stamps, except one heavy Chilian mill, which works well. The extreme remoteness of the territory and the high prices of transportation have kept the prices of unskilled labor at five or six dollars a day; but two or three thousand Chinese have already arrived, and the approach of the Union Pacific Railroad (which runs within about four hundred miles of Virginia City) insures steady and comparatively cheap supplies. Hitherto freights have been received by the Missouri river only six months in the year, giving great opportunities for speculation, and causing some suffering in the winter. Agriculture flourishes exceedingly; population about 40,000.

WYOMING.—Few mines have yet been opened in this new Territory, though a number are promising. One small quartz mill is in operation.

COLORADO.—Colorado advanced rapidly during 1868. After spending much time and trying many new processes for taking out the gold, most of the companies have fallen back upon the old method of plain stamps. Considerable foreign capital, chiefly English, has been invested. The silver mines are beginning to yield; and the copper veins are promising.

NEW MEXICO.—The Cimaron gold mines south of Bent's Fort, are thought to be rich, but few returns have yet been received. The rich silver deposits, too, near Mesilla and elsewhere, await the influx of American energy and capital, which can only come with a Southern Pacific Railroad.

ARIZONA.—In the same general condition as New Mexico. Inaccessibleness, hostile Indians and Mexican thriftlessness keep down the yield of the precious metals to a trivial sum; but whenever the territory enjoys railway communication, it will produce silver to the amount of many millions annually.

Correspondence.

[To insure the insertion of correspondence in our columns, the full name and address of the writer must be given.]

[FROM OUR SOUTH AMERICAN CORRESPONDENT.]

The Mountains of Guayana.

GUACIPATI, Feb. 14, 1869.

HUMBOLDT, who is the best authority on the mountain systems of South America (and with regard to the mountains of Venezuela, but little has been added to his descriptions by travelers since his day) groups the whole mountain elevation, lying south and east of the Orinoco, down to the Atlantic Ocean, and north of the Amazon, into one system, which he names the "Mountains of Parima." Many and diverse are the local names given to individual mountains composing this group. No two maps of this region agree with each other.

This grouping is a natural one, for the individual ranges all rise out of a plain, which is over one thousand miles long east and west, and over four hundred miles wide north and south, and elevated above the sea from 960 to 1,040 feet. He very correctly describes these ranges as separated the one from the other by wide stretches of savannas and plains covered with grass or forest.

"The distinctive characteristics," he correctly observes, "are the rocks of granite and gneiss, the total absence of calcareous secondary formations, and the shelves of bare rock, which occupy immense spaces in the savannas."

These mountains are not connected with the Andes on the west, nor the Coast range on the north. The general trend is northwest and southeast, giving contour to the Atlantic coast from Cape North in Brazil to the mouth of the Orinoco. Both geologically and topographically, they stand by themselves, if not the oldest, at least among the oldest, rock formations of South America, or the globe. Our Canadian geologists would call them instinctively "Laurentian." HUMBOLDT says they are the "oldest granites and gneiss." The general height of the group is not great above the sea—probably not much, if any, more than 2,000 feet—but some heights, such as Duida, Maravaca and Uniada reach 10,000 or 12,000 feet. The group contains, besides the many individual ranges, innumerable isolated mountains of gentle slope and height, called *cerros*.

To these general remarks, drawn from HUMBOLDT'S personal narration, I propose to make some additional observations made by our party since we have been in this country.

The Ymataca range of mountains, the most northerly of the Parima group, runs a little west of north, and east of south, as seen from the heights of San Maria. The next range, south, after crossing the plains of Cume, is Santa Cruz, running east and west. Rising out of this plain is Chaguramal running nearly northwest and southeast. Beyond these are the cerros of Miamo, trending northeast and southwest, and far beyond, on the verge of the horizon, are the heights of Palmal, rising quite abruptly, and to greater height than any within view.

The gold bearing range runs north-northeast and south-southwest. The general strike of the rock strata, whatever way the mountains run, is east and west. There is some variation. Thus, at the Gumari River, in the valley of the Iguana, the strike is, N. 20° E. The dip of strata, with few exceptions, is southeast, usually at high angles.

Traveling over the Ymataca Mountains lately, on newly-opened roads, I have discovered quite unequivocal signs of anticlinals. The first noticed was about 30 miles south of the Orinoco. At the south base of the twin cerros, La Orgueta, at our camping-ground for breakfast, I found the dip to be N. 55°. Again, at the second crossing of the Candelaria River, on the north slope of the Santa Cruz Mountains, I found the dip of the siliceous slates to be N. 85°, and not to change at several other observations through the range. Before reaching Platinol, on the south slope, they had resumed their usual dip. A similar range of slates dips north about 13 miles south of Guacipati, at a very steep angle, nearly vertical.

After ascending the Orinoco as high as Guayana Viejo, cerros, or rounded hills—generally of moderate elevation—(200 to 300 feet high) are always present within the horizon. I understand from travelers who have ascended this river in steamboats, that this is a feature of the scenery as high as Falco, or four hundred miles above Ciudad Bolivar. At Guayana, for the first time, they are seen to cross the river and extend north of the stream, on the savannas, as far as the eye can reach.

The mineralogical composition of the cerro on which the City of Bolivar is situated, will serve as a fair representative of all.

At the north base, along the rise, it consists of black, hornblendic gneiss, with stratification and trend N. 35° E. It exfoliates by weathering in concentric layers, giving the appearance of boulders to masses thus influenced. On decomposing it forms a soil richly colored red. On the summit of the hill there is a wide band of imperfect garnets, which is also to be seen on the east base of the cerro at the Lagoon. The west end of the cerro is red felspathic granite. This sudden change of mineral ingredient is exceedingly common. Separated from this cerro by a depression, there rises another of about the same height (197 feet above the level of the river at low water), consisting of whitish grey micaceous quartzite, which is but a metamorphosed sandstone. In places it would form a beautiful building stone. At the chapels, a little further on, and in the same range, it becomes a true granite by the introduction of felspar. The soil derived from the decomposition of this rock is light-colored sand, and supports coarse grass.

The following observations made along the line of travel, southeast from Las Tablas, to the gold mines of Mocupio, will give a tolerably correct notion of the various swells of land, and the geology of the country:

At Las Tablas the rocks are coarse, hornblendic gneiss; elevation above the sea, by Aneroid barometer, 174 feet. One league south is Chiriga, 100 feet above Las Tablas, composed of similar gneiss. Half a league further on is the cerro of San Felix Viejo, of grey and reddish granite, 305 feet above the level of the sea. Similar hills are crossed, until at San Felix Nueva we are 349 feet above the level of the sea, and distant from the river four hours' travel, or twelve miles. On to the Ranch Guaykeyma, the country was granite with large veins of quartz and much felspar, with seldom mica present. Gneiss was hardly ever seen. At Guaykeyma and beyond gneiss prevailed again, dipping 60° and 80° S. E., with frequent reddish garnets and domes of quartz. Between San Felix and Guaykeyma the first cerro was 389 feet above the sea; the second and third were 437 feet; the fourth was 478 feet; the fifth 526 feet. But on the sides of the mule path were cerros rising to much greater heights. La Orgneta must be 600 to 800 feet higher, since even at the base we were 744 feet. Passing on to Upata, the altitude of the next cerro was 1,133 feet; that of the second 1,285 feet, at that of the plains at Upata 1,234 feet. One league beyond this village the Ymataca attains its culmination, and is here, at the divide between the hydrographical basins of the Essequibo and Orinoco, 1,335 feet high, with cerros rising full 500 feet higher.

S.

Letter from Professor Egleston.

SCHOOL OF MINES, COLUMBIA COLLEGE,
CORNER 49TH STREET AND 4TH AVENUE,
NEW YORK, April 19, 1869.

EDITOR JOURNAL OF MINING:

SIR:—My attention has been called to an editorial, in your issue of the 17th inst., in which you criticize the metallurgical project given to the third year students of this school for the year 1868 and 1869. I do not think that you have received the idea of the project, and since you have held it up so publicly to ridicule, I hope that you will allow me space to show that you have not.

The ore is an iron pyrite, containing a variable quantity of copper, with a small amount of quartz as a gangue. The amount of sulphur which it contains is 43 per cent. of the whole ore. The amount of arsenic and antimony together is 2 per cent., which is an average of all the ores. The provision of collecting the sulphur is made with a view to call special attention to every means by which incidental products in the treatment of the ores can be turned to advantage, and be made to pay part of the expenses of the process. This is well understood in Europe, and in the works at Freiberg no less than fourteen or fifteen different substances are made for sale, as incidental products of manufacture. The students understand that they are not obliged to roast in heaps, but that they may use this or any other process which seems best adapted to their ore. They understand, too, that they are not expected to make any great amount of money out of the sulphur if they do roast in this way, nor to collect a great deal of it; but they are expected to *save* what they can. As the amount which can be collected will be but small, it is presumed that the demand for sulphur for other purposes will warrant the sale of the whole of it as such, as is the case in the works in Europe where the sulphur is collected.

The provision of condensing the gases is made with a view of calling attention to this subject, which is being enforced by law in Europe, and which some day must be the subject of legislation here. The gases so condensed are to be made useful in the process, or the acid sold.

The whole idea of the project is thus to force the student to take advantage of every circumstance which may furnish him the means of reducing the expenses of the works by means of incidental savings, as well as by economy in the process itself.

Very great changes are being made in the metallurgy of the poor ores of copper by the introduction of wet methods. There are large establishments in Europe, and some projected in this country, where the treatment is carried on by solution, the acid being manufactured in contact with the ore or separately, as occasion may require. In such cases the acid does not need to be refined. But in case there is a supposed demand for it, the student is at liberty to sell it and use a dry process, if that seems to be best.

I should not have troubled you with these statements but for the severe manner in which you criticise the project. The writer of the article does not seem to be aware that we place quite as much stress upon the different commercial considerations which affect the solution of such problems as on the theory of the process. *The successful process is the one that pays*, and for this reason as much time is devoted in the lectures to the discussion of the commercial bearings of the treatment of the ores as to the theory of the process.

If the project had been stated in less general terms, it would have failed of its object, since the methods applicable to the ore would have been reduced to such a small number as to be almost prescribed. No scope would then have been left for that careful discussion of the merits of the different processes, and for the exercise of that critical judgment in the selection, upon which so much of the success of any engineer depends. As now stated, there are a number of methods which might be applied, and as the student is obliged to give his reasons for the selection he makes, he is called upon before he enters his profession to use the same discretion that he must use in practice. That the projects, whether in the department of metallurgy or mining, are not "conundrums" the solution of the problems, which are on file at the school, will prove. These problems have always been intelligently solved. The Faculty will always be happy to have gentlemen interested in the subject examine the drawings, estimates and description of the works which have been executed at the school.

Yours truly, WM. EGLESTON, JR.,
Professor of Mineralogy and Metallurgy.

[We are quite ready to disclaim the "severity" of which Prof. EGLESTON complains; but we do not see that his explanations touch the point which we criticized. The project positively dictates both the saving and sale of sulphur, and at the same time the manufacture of sulphuric acid. We question whether that could possibly be economical, and if it is done anywhere in the world, we should be thankful to Prof. EGLESTON for the facts. Our notion, pretty clearly expressed, was, that where sulphuric acid is made, sulphur cannot be economically saved, because it is, of course and always, better to utilize all the sulphur as acid. Probably we shall not be enlightened at present upon the subject. We do not ask the Professor to solve for us in advance the problem which he has set his pupils. But when the projects are on file we shall be glad to be instructed. For the present, we adhere to our views, and feel sure that more, not less, "scope" would have been left to the engineer if it had been made optional with him to produce either sulphur or acid, instead of forcing him to do both—a requisition which, in our opinion, actually excludes the choice of the best process for the ores referred to.—ED.]

How to Improve our Mining Interests.

EDITOR JOURNAL OF MINING:

SIR: The reports of Mr. ROSS BROWNE and Mr. R. W. RAYMOND to Congress on the various mining districts of the United States, call for the grave consideration of all interested in the future prosperity of our country. With the view of throwing out some suggestions which may be turned to account, I will, with your permission, state my views of the subject.

It was at one time supposed that our gold and silver mines were so rich, that they would enable us to pay off our enormous national debt within a very few years. Instead of that, it appears that the product of our mines is steadily falling off, at the rate of fifteen per cent. per annum. Not only is the yield of the Placer mines decreasing, but the yield of the quartz mines is likewise falling off. There being no question as to the richness of our mines being quite equal to all that has been said of them, and perhaps superior to the mines of any other country, there must be some reason for so unsatisfactory a result. I consider that the state of our laws affecting mining companies is the chief reason, and the want of a proper method of granting titles to mining property is another reason of the falling off, and to each of these points I will now direct your attention.

It is well known that most of our mining companies are got up, not with the view of making money by mining, but by selling shares, and pocketing three-fourths of the money. With that object the companies are formed with large capitals, so that the plunder may be as large as possible. When a company which ought not to require more than $100,000 comes out with a capital of one or five millions of dollars, it is plain what the object is. Mining grants are originally got for nothing, and consequently almost any of them can be purchased for a few thousand dollars. As to the cost of working them, that need not exceed ten or twenty thousand dollars, so that a capital of $100,000 or at most $200,000, is ample for any company with honest intentions.

The promoters of a company do not fix the price they are to charge for the mines in their Prospectus, or in their Deed

of Settlement. This omission enables them to appropriate to themselves the proceeds of all the the shares beyond a small portion set aside for "*working capital*," which is no doubt the reason why they make the capital so ridiculously large. In England and France, promoters are obliged to state the price of the property both in the Prospectus and Articles of Association, which prevents them appropriating any shares to themselves beyond the number specified as the price of the property. In this way there is no inducement to make the capital of mining companies larger than is necessary.

An act of Congress with the following provisions would set this matter right. 1. The Prospectus and Deed of Settlement of every new mining company shall state the price to be paid for the property, and how much of that price is to be paid in shares. 2. Copies of all contracts to be lodged with the Registrar, when the company is registered. 3. The Registrar shall be empowered to refuse registration to any company if it appears to him (after due consideration of the wants of that company) that the capital is too large. 4. It shall be illegal for a company to sell its shares at less than par value, and all contracts for so selling shares shall not be valid.

In the last number of the AMERICAN JOURNAL OF MINING, you gave a list of 42 new mining companies, formed in San Francisco for working the White Pine mine. The united capital of these companies is upwards of $50,000,000, thus commencing a new era of stock jobbing, which will be followed up by a new course of extravagance, and ruin to the mining interests. I hope Mr. RAYMOND will take this matter into consideration, and call the attention of the Government to it in his next report, for it is now manifest beyond all question, that unless the law affecting mining companies is speedily amended, confidence cannot be restored to mining, and without that there can be no satisfactory results.

Mining is no doubt the main stay of the Western states, for it is mainly to it, that the agriculturists can look for a market for their produce. California can grow excellent wheat, but unless the price in Europe is high, say 60*s.* per quarter and upwards, the wheat cannot be sent there to pay expenses, and it is not one year in ten that the price in Europe reaches that point. The Californians of all classes are therefore vitally interested in having the necessary reforms in our mining laws carried out without delay.

I come now to the no less important question of dealing with faults of mining property by the state.

In the absence of legislation, the people have taken the mining lands into their own hands, by appropriating claims to all who applied for them, and afterwards making laws to regulate these claims for themselves. Congress has itself to blame for this, and that being so there is no alternative but for the Government to confirm all that has been done, and to deal with the unappropriated lands. No new claims should be allowed to be taken up except under an Act of Congress to be passed. What the provisions of that Act should be, I am not prepared to say, but that there should be a royalty payable to the government there is no doubt. A royalty of five per cent of the produce would be a burden to no one, and its payment would be the best possible evidence of title. This reform would raise the value of claims already made, for they would be free of royalty. It would likewise have the effects of making the owners of claims stick to them, and not run after new claims, which has seriously injured the character and interests of every mining district. If agriculture had been treated in the same way as mining we should have seen equally had results. Farms would be taken up to-day and left to-morrow, and nothing but ruin to all concerned would have been the consequence.

Liberty to swindle the public, is not liberty but license, and such is the history of most of the mining companies of the present day. There is therefore no marvel that mining has fallen into disrepute with the public, and that consequently three-fourths of our mines have been abandoned for want of the necessary capital to work them. President Grant, in his inaugural speech to the Senate, says that it may be necessary for the Government to aid the mining interests in some way, and if he will recommend a thorough reform of the Companies' act, and of the method of granting titles to mines, he will do more for the interests of mining and of the country at large, than by any other means I can imagine.

MERCATOR.

Missouri Lead and Coal.

GEOLOGICAL AND MINING CABINET, GENERAL LAND OFFICE, WASHINGTON, D. C., April 24, 1869.

EDITOR JOURNAL OF MINING:

SIR:—There has been recently received at this office a very interesting series of rocks and minerals, showing the structure of the SIMPSON lead and coal mines in Moniteau Co., Missouri. These works lie about 10 miles south of the Union Pacific Railroad, on the high banks between the Osage and Missouri Rivers, and have been in operation since 1867, yielding a large profit. The coal bed is worked in a vaulted room, now of forty feet diameter, the whole of which is excavated in the coal, since the side, roof and wall of the mine are all of this mineral. What the true thickness of the vein may prove to be is unkown, but it has already been penetrated to the depth of forty-five feet, and it may extend downwards twice as far. There are two descriptions of coal taken out. The first five feet worked consisted of bituminous coal—the remainder is a variety known as *cannel*. Of both of these kinds specimens have been forwarded; the most remarkable by far being the latter kind. It is dense, fine in texture, and polishes like plumbago. In the turning lathe it would work to an admirable smooth, jetty surface, and blocks of any required size can be had. The grain is fine enough for crayons—but is sold only for fuel at the mines, and at a rather low price.

The lead mine is about a mile distant from the coal, and consists of a vein in the subcarboniferous rocks, the sides of which are lined with fine calc spar. The lead ore is frequently taken out in large cubical crystals. The mineral combinations of this ore forwarded to the office are of much interest, in a scientific point of view; and the working yield is very encouraging—a cubic space of ten feet by twenty having afforded about six tons of lead. The vein largely widens and improves as it is explored in a downward direction.

A. R. ROESSLER.

Mining Summary.

GOLD AND SILVER.

Nevada.

The Comstock.—The following painful particulars of the recent calamity in Nevada are from the Virginia City *Enterprise*, April 8, 9 and 10:

"*April* 8.—Yesterday morning about 7 o'clock the timbers of the Yellow Jacket mine took fire on the 800-foot level, 200 feet south of the shaft, near the Kentuck line. The fire was discovered about 7 o'clock, though it had doubtless been burning longer—some of the miners say that they detected the smell of burning timbers as early as 3 o'clock in the morning. The night shift leaves off work at 4 o'clock, and doubtless the fire originated from a candle left carelessly sticking against a timber by some one belonging to the night shift. During the interval between 4 and 7 o'clock there were no workmen in the mine except carmen, but before the danger had been discovered, many men belonging to the day shift had been lowered into the mines—Yellow Jacket, Crown Point, and Kentuck. The first work after the fire was discovered was to try to get the men up from the levels below, and it was not until after John B. Winters, Superintendent of the Yellow Jacket, arrived at the mine from this city that the alarm was sounded. As soon as the alarm was given the fire companies of Gold Hill and Virginia City brought out their machines, and were soon on the ground. Meantime, those about the several mines were doing all in their power to save those left underground. At first the smoke was so dense and frequent that that no one dared venture into either of the shafts, but about 9 o'clock it seemed to draw away from the Kentuck, and two men descended to the 700-foot station, where they found two dead bodies. About the same time two brothers, employed in the Crown Point mine, attempted to come up the shaft on the cage. One became overpowered by the smoke and gases, and sunk down insensible. His head was caught between the cage and timbers, and nearly torn off. When the cage arrived at the surface the other was found to be in a state of insensibility, yet he held to his dead and almost headless brother with a grip that could hardly be loosened. He was carried away and the best of medical attendance procured for him; and although he remained insensible the greater part of the day, it was thought last evening, at 8 o'clock, that he would recover.

"Toward noon, some of the firemen at work in the Yellow Jacket ventured down to the 900-foot level, and succeeded in bringing up three bodies. There is not the slightest hope that any man in either of the mines is alive or was alive at 12 o'clock yesterday.

"It being known that there were a number of miners in the Crown Point at the 1,000-foot level, far below the fire, and where the blower would supply fresh air, at about 11 o'clock in the morning a cage was sent down with a lighted lantern upon it, and a small box with candles and the following dispatch in it, written on a large piece of pasteboard, by the Superintendent, J. B. Jones:

"'We are fast subduing the fire. It is death to attempt to come up from where you are. We will get to you soon. The gas in the shaft is terrible, and produces sure and speedy death. Write a word to us, and send it up on the cage, and let us know how you are.'

"No answer came back, and there can be no doubt but that the men for whom it was intended were all dead before it reached them.

"As soon as it was known that the mines were on fire, and that a large number of miners were imprisoned below, the most intense excitement prevailed, both in Gold Hill and this city. The wives, children and relatives of the lost flocked to the various hoisting works, and their grief was such as to cause tears to course down the cheeks of the most stout-hearted. Father Monogue and several Catholic clergymen did all that could be done to comfort the weeping women and children, but even the reverend fathers could find but little to say upon such an occasion. The poor women, with their crying children clinging to them, stood about with hands clasped, rocking themselves to and fro, yet scarcely uttering an audible sob—they seemed perfectly astounded and overwhelmed at the suddenness and awfulness of the calamity. Turn where they would there was no comfort for them. At the Yellow Jacket all but one man known to be below had been brought up dead, yet no smoke issued from the shaft, while at the Kentuck and Crown Point shafts there steadily arose a thick and stifling column of smoke, mingled with the pungent gases generated from the burning wood and heated ores below. No person who stood at the mouth of either of these shafts but experienced the choking effect of the smoke and gas issuing from below, or could for a moment entertain the slightest hope that any one of those in the mine could be alive, yet wives and relatives would still hope, against everything, and in every direction almost superhuman exertions were made to extinguish the fire. By closing up the shafts and turning down into them the steam from the several hoisting works, the fire could have been extinguished almost immediately, but to do this was equivalent to say that all are dead below—and would, indeed, have been death to any that might have been living—besides, the order would have drawn from all present at all interested in the fate of those below such a wail as no one would wish to hear.

"No one could have lived to decend 20 feet into either the Crown Point or Kentuck shafts, but the Yellow Jacket shaft being cooler, the gallant firemen and equally gallant miners descended it, and bravely began the battle with the fire. A long string of hose was attached to a hydrant on Main street, and carried down to the 800-foot level, when the work began. The firemen would advance as far as possible, extinguishing the burning timber, and when a cave occurred or the timbers seemed about to give way, the water would be shut off, and the miners would go to the front and make all secure. The walls of the tunnels were so heated that it was very frequently found necessary to fall back even after the burning timbers had been extinguished, and play the stream upon the rock in order to cool it down, and in places water nearly boiling hot stood to the depth of two or three inches on the floor of the tunnel. Then the air was bad, and the steam and gas almost suffocating, and it was found necessary to lead an air pipe from the main pipe of the blower in order to enable the men to continue work. During this fight several caves occurred, when the miners came to the rescue, and when the ground was made secure the firemen would again go forward with their stream. It was such work as few firemen in the United States have ever undertaken, and such as none but the firemen of a mining country could have done.

"Some of those who were below, and who were fortunate enough to escape, give most thrilling descriptions of the scenes which occurred far down in the drifts of the lower levels. All agree in saying that the smoke and stifling gas came upon them suddenly, and that, although they rushed at once for the shaft, there were many who sank down on the way. At the Crown Point the men so crowded upon the cage that it was detained nearly five minutes, the station man fearing to give the signal to hoist while so many were in danger of being torn to pieces. A young man who came up on that cage told us it was the most fearful moment of his life. One man, unable to find room to stand upright, crawled upon the cage, and, thrusting his head between our informant's legs, begged to be allowed to remain there and go up. He was allowed to remain, and his life was saved. As the cage ascended, those left behind were heard to throw themselves into the shaft, and some were heard falling back on the floors. Another young man told us that in rushing for the shaft it suddenly occurred to him that he might fall into it, when he got down and crawled upon his hands and knees, feeling his way till he knew he had reached the shaft. While lying at the shaft, he says that three or four men came running from behind and pitched headlong into the shaft. At one lowering of the cage, a man who went down to rescue the sufferers, finding that there were more persons below than could be brought up that trip, himself got off into the drift and put on board a young man who was so suffocated that he could hardly stand. We were unable to learn the name of this man, but were happy to hear that he afterward was brought up safe and sound. Few firemen in any part of the United States would have had the heart to tackle a fire 800 or 1,000 feet below the surface of the earth, and we now wish to state that all did their duty most cheerfully, even striving to be allowed to go below. It was comical to see the shifts—for they frequently changed—of five laddies with their big hats on going down on the cage—a new way of going to a fire. A stream was kept on in the 800-foot level all day, and about 8 o'clock at night, as it was found the fire was rising, a second stream was put on at the 700-level. The fire was finally so far subdued, as we learned about 12 o'clock last night, that the workmen were able to reach the bodies of some the unfortunate.

"*April* 9.—Some venturesome firemen and miners descended, and, by strenuous efforts and by groping around, succeeded in recovering and sending to the surface 13 bodies. Some of these they recovered from the bottom of the shaft, at the 1,100-foot level, where they had fallen from the levels above; but the most were found in the 1,000-foot level, lying in all sort of despairing positions, just as they sank down overpowered under the effects of the foul smoke strongly charged with the pungent and deadly carbonic acid gas. The body of one man was found sitting in the north end of the Crown Point shaft, doubled up, with his head resting on his knees, immediately under a trickling stream of water. The body of another was found in this pump-shaft, with his arms tightly embracing the blow-pipe.

"The corpses all presented a most shocking appearance. All the features were swollen and distorted, and it seemed as though all the blood in the bodies had been forced into the heads. So distorted were the face of most of the dead, that their wives and relatives were not allowed to see them.

"Some of the men employed in the Kentuck and Yellow Jacket mines when the first alarm of fire was given, knowing of the communication with the Crown Point mine, desperately endeavored to secure themselves by egress from it; but when near the Crown Point shaft an explosion occurred, which stunned if it did not kill them. The force of the explosion was so great as to throw quite a body of chips, dirt, and refuse in the shaft. Whether the gas, or a quantity of giant powder supposed to be stored under ground, was the cause of the explosion, has not been ascertained. One of the dead miners taken out of the Crown Point mine was found hanging in a shaft on a ladder, one of his legs apparently fast inside of the rounds of the ladder and his arms in their death-grip fast to the same, while his head fell backward. It was with difficulty that his discoverers separated the corpse from the ladder.

"The funerals of the various victims were largely attended and solemn. One funeral of eight miners was the largest and most imposing ever seen in Gold Hill.

"*April* 10.—Yesterday morning it was evident that the fire in the Gold Hill mines had increased to such an extent as to prevent any further search for the bodies of the still missing men, and as it was perfectly impossible that they could still exist, after being subjected to the inhalation of the carbonic acid gas, it was determined, as a dernier resort, to try the effect of steam as an extinguisher. Accordingly, at 11 o'clock A. M., each one of the shafts of the Kentuck and Crown Point mines, and the Yellow Jacket shaft, at a point where the Gold Hill drain connects with it, were effectually sealed up by means of planks, wet blankets and moist earth, and at twelve o'clock, by means of heavy iron piping connected with the boilers, a strong volume of steam was sent down the Yellow Jacket through the large pipe of the blower, conducting it down into the 800 and 900-foot levels of the mine, and from there it would go wherever it could best find egress into other parts of the mine. At 12 o'clock last night, April 8, we received information that the fire had been subdued by the steam, and that the Yellow Jacket mine would soon again be occupied by miners.

"The Coroner's verdict contains the following details of some of the unfortunate miners, who may have friends in the East or in Europe: John Hallisey, a native of Wisconsin; aged 35 years; relatives unknown. John Hogan, native of New-York city; aged 22 years; parents residing in San Francisco; single. Joseph McLellan, native of County Derry, Ireland; aged 36 years; relatives unknown. George Tompkins, native of Canada; aged 29 years; single; has a mother residing in San Francisco, a brother in Virginia, and a sister in Gold Hill. Richard Bickle, native of Cornwall, England; aged 33 years; unmarried; he has a father and mother living at Cornwall. George Peters, a native of Crowan, County of Cornwall, England; aged 26 years; only relative known is an uncle residing in Cornwall.

Arizona.

The Prescott *Miner*, March 6, has the subjoined intelligence: "News brought from the Black Canyon Diggings, by Dr. J. N. Candless, Jos. Kelsey and others, is quite favorable. The miners are making from $4 to $10 per day. Poland, Marsh & Co. have their ditch, which is about two miles in length, almost completed, and are confident that, as soon as they commence washing, they will make $20 a day to the hand. The Dr. exhibits some course pieces of gold, the proceeds of five pans of gravel from their claim, which weighed $1 70. He says the hills, for five miles up and down the creek, would pay exceedingly well if properly worked, but, unfortunately, those engaged in mining there have not sufficient capital to work their claims as hill diggings are worked in California....A short time ago rich placer diggings were said to have been discovered on or near Cherry Creek, in the southeastern part of this county, and a party of prospectors started for the place, but, upon examination of the country, saw nothing to indicate that gold existed there....Late news from Jackson, Lovejoy & Co.'s hydraulic diggings on lower Lynx Creek, eight miles east from Prescott, is also quite cheering. Mr. Solomon Shoupe reports that after a run of six days—three men working—the large sum of $360 was realized, which gave to each hand engaged in washing it out the snug sum of $20 a day. Mr. Shoupe reports that, in an old channel in his claim which is above Jackson & Co.'s., he has struck very rich dirt, but that, for want of sufficient fall, he will have to ground-sluice it. His reservoir is nearly completed, and

he expects soon to take out considerable gold. Lynn Creek, from its head to where it runs into the valley, some 15 or 16 miles, contains a great deal of gold, and the bed-rock flumes will yet be placed in it and the creek robbed of its treasure."

Montana.

The Virginia City *Democrat*, April 10, has a plentiful supply of mining news, from which we select the following items:—"The Watseka Lode, at the depth of 185 feet in the Hendrie Shaft, shows a vein of four feet of splendid quartz, richer by far than any that has yet been taken out. The Julia Homes, hard by, at the shaft of Stewart & Co., and at a depth of 85 feet, shows a vein of two feet of paying quartz, with every indication of the widening of the vein. The developments on each lode are of the most encouraging nature, and the effect upon the town and district of Rochester is such that business is lively, trade brisk and every miner hopeful. We learn that the miners are all busy, and employment is afforded to all.

KEYSTONE LODE—SUMMIT.

"Mr. Covely has been working day and night in deepening the Discovery Shaft. After getting through the cap, the water-level was attained with a fine vein, though narrow, of rich paying quartz. This has been followed until it is now from three to four feet in width, of ore that will yield from $80 to $100 per ton, by mill process. The water has increased in volume so that it necessitates the erection of a whino, to keep the mine sufficiently drained for work. Mr. C. will have his whim up in a few days, and work will be renewed upon the Keystone.

THE GEORGE PFOHL LODE.

"This lode, a new discovery at the head of Biven's Gulch, has been prospected by Mr. Pfohl, by a rude arastra, and the yield is $40 per ton. The vein increases in width as the shaft goes down, and the ore is easily extracted.

BIVEN'S GULCH.

"The miners of Biven's, Harris, Ramshorn and California Gulches are rejoicing over the late falls of snow, and are confident of a prosperous and successful summer's work. We are certain, from all we hear from these districts, that as much gold will be taken out in 1869 as the districts have ever yielded.

"Silver Star is proving the White Pine of Madison County. A run of five days of the Iron Rod ore, in the Stevens & Trivett mill, with a six stamp battery, yields $5,000. The Green Campbell mill is running day and night on richer ore than the mine has ever yielded. Two other mills will soon be erected in the district. One of these go up on the Quincy Lode; the other we have not heard on which particular lode it is to be located, but it is intended to operate upon some one or more of the many rich lodes of the district. East Silver Star has been thoroughly prospected during the winter, and bids fair to rival the western portion of the district. We hear of a rich gulch in this district, but cannot tell yet about it.

SILVER STAR.

"Mr. Wann has completed his purchase of 600 feet on the Julia Holmes Lode at $4,000. This purchase is a most judicious one, not only to the purchaser and seller, but to the district; by it a lawsuit has been nipped in the bud, and the disputants are relieved of the payment of costs and attorneys' fees, and the purchaser will now have a sufficiency of paying quartz, convenient to the mill, to enable the company to run steadily; and the district will, by the development of the Julia Holmes, add to the reputation thereof as a paying district; one in which, so far, investments have proved profitable. Messrs. Stevens & Trivett say they are crushing away, and from the good humor manifested, we opine the mill, and the Iron Rod ore, is as good a thing as they need just now.

"A new lead has been discovered and traced for over two miles, which is expected from its present prospects to entirely eclipse the Green Campbell Lode, notwithstanding its vast richness; the crevice is 10 feet wide, and runs parallel with the latter.

WASHINGTON GULCH.

"Extensive preparations are being made for mining in this gulch the coming season. The companies are preparing their flumes and are going into business in real earnest and good spirits.

LITTLE PIPESTONE.

"Belcher & Co. are running a water ditch for mining operations on the Little Pipestone. The diggings are limited, but good prospects have been obtained, and the company are sanguine of good pay."

California.

SONOMA COUNTY.

A correspondent of the San Francisco *Times*, writing from Petaluma, March 28 says:—"Quite an excitement prevails in this part of the country, in consequence of a silver mine being discovered about nine miles from this place. This (Sunday) morning, several hundred persons left for Graham Creek, in the Sonoma Mountains, where the ledge is located. On the 24th inst., Patrick Walsh and Ira Davis found a ledge which appeared to be rich in some mineral to them unknown. Without making known their discovery they had the rock assayed, which proved to be rich in silver, with a trace of gold. The assayed rock was taken from the top of the ledge, and no doubt a better grade of one will be found on opening the mine. So many are rushing in and taking up large claims, that it has been found necessary to adopt some mining regulations; and consequently a meeting of the citizens of the district has been called to meet on Tuesday next, to form mining laws. Before this, traces of silver ore have often been found in that vicinity; but this is the first discovery that ever promised anything valuable.....The Petaluma *Journal*, April 8, has the following account:—"The excitement in regard to the discovery of silver ore in Sonoma mountains, is little, if any, less than at the date of our last publication. It has extended to Santa Rosa and Sacramento, which places have been well represented by visitors during the present week. The numerous claims are being diligently prospected, but the result has not shown any decided improvement in appearance, nor the development of any well-defined ledge. Some of the croppings show unmistakable signs of silver, but we must see more decided evidence before we pronounce the district rich in precious metal. We have seen specimens purporting to have come from the Grampian district, which we are positive never had an existence in that locality. We have done a little prospecting there ourselves, and the rock alluded to bears no resemblance to that actually in the district. That there are good specimens found there we will not deny; but we think it in decidedly bad taste to pass off Washoe and White Pine quartz as that from the Grampian district. It is an injury to the district, to our city, and to the owners themselves, as they will find to their sorrow, either in the event of success or failure....We are informed that the Buckeye or Davis Company have organized and appointed a President, Secretary and other officers, and deposited a certain sum with their Treasurer to pay present expenses. They have purchased mining tools and left orders with their blacksmith for the manufacture of such tools as could not be procured in the city. The company are satisfied the mines will pay, and have broken ground for a shaft and turned on their claim, and intend pushing the work forward as rapidly as possible. Nature has already sunk a shaft to the depth of one hundred feet. The ledges over forty feet wide, and nearly exposed by the action of the water. The casings on the north side of the ledge can be distinctly seen, and dip toward the west."

ALPINE COUNTY.

The Alpine *Chronicle*, of March 29th, has these items:—"The Pittsburg tunnel is being pushed ahead as rapidly as possible. It is now in about 720 feet, and it is thought that eighty feet further in it will strike the Dunkirk ledge, which is supposed to be an extension of the I X L.....We congratulate our readers, and all interested in Alpine county, upon the striking of the mammoth Pennsylvania ledge by the Pennsylvania Company. They commenced a tunnel in June, 1865, and on the 6th instant, after nearly four years of hard work, they struck their ledge, which is eight and one-half feet wide, of which four feet is solid quartz and the balance quartz boulders and decomposed quartz. The ore resembles that of the I X L, but the precious metals seem to be more evenly distributed through the Pennsylvania ore. The ledge was struck at a distance of 918 feet from the mouth of the tunnel, and 500 feet from the surface. With the exception of the first 200 feet the tunnel has been cut through hard granite the entire distance, to within twelve feet of the ledge, when they struck soft rock. After passing through the ledge the tunnel cut through a seam of bluish clay six inches wide to the foot wall. From appearances, this mine promises to be one of the best.

Canada.

Latest advices from the Thunder Bay Silver Mines indicate, according to the Superior (Wis.) *Gazette*, "a highly satisfactory result up to the present working. The superintendent of the Thunder Bay Company's mine is making rapid and judicious progress in his work. Having been engaged for several years in the silver mines of Germany and Norway, he is initiating on this lake a different system of mining to what has heretofore prevailed. He proposes no new process (for extracting more gold or silver than the ore contains) nor does he work merely to make some extraordinary show of mineral supply for the purpose of advancing or selling out the stock. His sole object seems to have been to open up the mine in a substantial, practical way, that the work now done from the beginning will not need remodeling, repairing or reconstruction, as is often the case, but will be in good shape to continue right along when they erect their 8-stamp mill in the spring."

COPPER.

Michigan.

The Portage Lake *Gazette* reports the following products for March:

QUINCY MINE.

Stamps	90 tons,	740 lbs

SCHOOLCRAFT MINE.

Stamps	24 tons,	150 lbs

EVERGREEN BLUFF MINE.

Barrel	1 tons,	1,362 lbs

The product of the Schoolcraft stamp-mill during the month of March was 24 tons, 150 pounds. There has been considerable trouble experienced with the new stamps, which have by no means proven the success they had been certified.

TIN.

Missouri.

ST. LOUIS, April 22, 1869.

EDITOR JOURNAL OF MINING:

SIR:—In a recent number of your excellent paper I noticed an article entitled "Missouri Tin is Something Else," insinuating that to the present time tin has been fraudulently obtained from the Missouri ore.

The article alluded to contained an analysis made by Dr. F. A. GENTH, to which are added some indefinite, equivocal remarks over the signature of Prof. A. R. ROESSLER, U. S. Geologist, General Land Office.

A very few quotations from the analysis will suffice to show how incorrect it is. At first the analyst seems to ignore the idea that stannic acid is "*artificially*" obtained by decomposing bichloride of tin in water, while "*native*" crystallized oxide of tin is metastannic acid. Has the Doctor mistaken the stannic acid, for metastannic acid? These two acids, though having the same composition $Sn O_2$ are perfectly distinct in chemical properties; the stannic acid is soluble, the metastannic acid insoluble in azotic acid.

Now, does this gentleman ignore the fact that there is no metastannic acid without tin, and that the metastannic acid can be reduced in a metallic state, (tin) by heating it in a crucible hermetically closed at a temperature of 420 deg. Fahr.? Again, how can the Doctor detect more than 10 per cent. of lime in syenetic rocks? Lime is not alkaline earth?

I must humbly confess my surprise in reading the enigmatical corollaries of Prof. A. R. ROESSLER, endorsing the analysis made by Dr. Genth.

Prof. R. says: "If we presume that a portion of titanic acid in the sphene is replaced by stannic acid, which may be the case on account of the isomorphism of the two substances, the percentage of sphene would be increased to about 5.7 per cent.

Why "presume" you, Mr. U. S. Geologist? Are you not able to "affirm?" What confidence can the people have in such hypothetical "guessing?" How can you conciliate your last unfavorable report with the Ex. Documents No. 293, dated May 19, 1868, in which you *affirm*, (*not presume*) to Secretary of Interior, that Missouri tin-ore, practically worked, could produce a heavy yield?

Notwithstanding I have with great reluctance decided to appear in the public prints on this subject, yet I feel that a development of tin deposits anywhere on this continent is a matter of national importance; and I deem it my duty to speak what I know. During the past two years I have made about 163 analyses of what was supposed to be tin-bearing rocks from various localities. Of these, by correcting gradually my flux, I found tin only in six; I have made many public tests, the most reliable parties, watching closely the entire process, and now I am boring to ascertain if the mineral is tin-bearing at a depth of a few hundred feet. Whatever may be the result of this experiment, I am confident that we have honestly and conclusively established the fact that there is tin in Missouri.

I should be mortified to see, in all this matter, the gilded spectre of perfidious Albion, extending her covetous hands upon this germ, so promising for the American nation.

HY. MAREC DE BEAUREGARD,
Mining Engineer.

[The above letter was forwarded to us for publication, though we half suspect that it was intended for some other paper. We never published, that we recollect, an article entitled "Missouri Tin is Something Else." But we have published a letter from Mr. ROESSLER, containing GENTH's analysis of certain supposed tin ore from Missouri. As we have a dim recollection of handling M. HY. MAREC DE BEAUREGARD'S claims to chemical skill heretofore, we will not bandy words with him now. His evident misapprehension of the work he criticises is due to ignorance, either of chemistry, or of English. In either case he should not be hasty to attack a chemist so well known as Prof. GENTH.

M. HY MAREC DE BEAUREGARD, it appears makes "analyses" with "fluxes"; and out of 163 of these experiments, found tin only in six. Pray why should not Prof. GENTH, who employs for his analyses the somewhat more delicate humid method, have as good a right as his critic, to fail to discover tin?

In a word, we have never undertaken, in the absence of personal knowledge on the point, to deny the existence of tin in Missouri; but we long ago pronounced this stunning French gentleman an incompetent witness; and we desire something besides a continual re-hash of his evidence.—ED.]

IRON.

Michigan.

The Marquette *Mining Journal* April 7, has the following interesting items of mining intelligence:—

The new hearth at the Pioneer Furnace is working admirably, and is said to be a great saving over the old plan. The stack which is supplied with it is now making more iron than ever before....Foster.—This mine is now being worked by Capt. Rowland, under contract. The Capt. expects to mine and ship 10,000 tons during the summer....Shipments from the Cleveland, *via* Escanaba will commence to-day from stock piles of about 25,000 tons, mined during the winter. This is certainly a good commencement and foreshadows a very large product for the year. The mine is in better condition than ever before....The ore traffic on the C & N W R. commences to-day, it being the design to fill the docks at Escanaba, preparatory to the opening of navigation. The management estimate the years work at not less than 300,000 gross tons....The Morgan Iron Company has commenced in earnest with the repairs on their Morgan furnace, and the construction of a tram road to their lands nine miles north of the furnace. The purchase of the lands in question insures them plenty of fuel for years to come, while the completion of the tram road will enable them to place coal on the bank, cheaper than ever before. Twenty four kilns of the same size and style as the old ones are to be built immediately. At the furnace they are rebuilding the casting house and increasing its size from 30x60 to 48x60 feet, with 24 feet height of post. The stack is to be raised six feet, and supplied with an ingenious contrivance for drying the crushed ore prior to its being charged into the furnace, from the waste heat at the tunnel head, and which is so arranged as not to interfere with the coal charges. The point gained by this improvement is the improvement is the expulsion of all dampness from the ore before charging the same into the furnace. The tunnel head will be opened only to receive the coal charges. The hot blast, instead of occupying a part of the top of the stack, will be placed on one side and below the top, and will be supplied with a system of pipes very different from the old fashioned oxbow plan, thereby increasing its heating capacity to three times that of the old one. The arrangement for collecting and destributing the gas in the oven will be similar to that of the Champion furnace, it having been practically proved to be the best now in use. The Champion Furnace has proved herself capable of making one ton of iron with 70 bushels of coal for a whole week, with 81 bushels to the ton, the week following; and when the old Morgan receives her new outfit, she may be expected to improve somewhat on the Champion which has proved herself to be the best furnace of her size in the county.

COAL.

Nevada.

COAL IN WHITE PINE.

The Virginia *Enterprise*, March 10, says:—"We were yesterday shown some fine specimens of coal brought in from that county by Mr. Frederick, the well-known jeweler of this city, and who arrived here yesterday morning. The deposit is but a few miles from Hamilton, and is said to be of immense extent. It burns well in a common stove, and even in the open air—the men engaged in prospecting the vein using it in doing their cooking. The principal vein is said to be six feet in thickness. Many locations were being made on the vein, which had been traced several miles.

Washington Territory.

The Vancouver *Register*, March 13, has the following account of a recent coal discovery:—"An extensive coal bed has been discovered on the east fork of Lewis River, twenty miles from Vancouver. The vein is fourteen inches thick and seven feet in width. Outcroppings were discovered last fall by E. L. Dole, and a joint stock company of eight incorporators was formed to prospect and open the hypothetic vein. Three tunnels have been run for that purpose. On the eighth of March the vein was struck, and the anticipations of the company are fully realized. There will be a load of the coal in Vancouver to-day. There is much excitement over it, and a general rush to take up claims in Clark County."

Mining in Prussia.

The statistics relating to mining in Prussia show the surprising progress by that country during the last twenty years in this industry by the introduction of improved systems of extraction by the use of steam power. In 1837 there were 1,587 mines worked in Prussia, giving employment to 33,161 miners. In 1867 this number had increased to 2,452, with 48,351 miners. The total value of the mineral production, which in 1837 was £833,932, in 1867 amounted to upwards of £8,565,000.

MARKET REVIEW.

FRIDAY EVENING, April 30, 1869.

Mining Stocks.—The following sales are reported as having transpired at the Mining Stock Board of yesterday:

SALES.

PETROLEUM STOCKS.		MINING STOCKS.	
100 Home	12 25	500 Benton	55
100 do	12 20	00 do	90
200 Pit Hole Creek	s3.. 1 50	100 Smith & Parm'le	$2 70
AFTER CALL.		500 Quartz Hill	s3..$1 45
1500 Central	90	500 Wallkill Assented	47
500 Buchanan	65		

SECOND BOARD.

MINING STOCKS.			
500 Benton Gold	51	400 do	b3.. 3 60
1000 do	50	100 do	3 55
300 Smith & Parm'le	2 70	100 do	b3.. 2 05
200 do	2 75	200 do	3 50
100 Con. Gregory	s3... 3 65	100 N. Y. & Eldorado	38
		100 do	37

The following is the list of quotations at the Board to-day:

GOLD STOCKS.

	Bid.	Asked.		Bid	Asked.
Consolidated Gregory	3 00	3 10	Montana Gold	25	
Grass Valley	31	1 60	Quartz Hill	1 35	1 45
La Crosse Gold		25	Smith & Parmlee Gold	2 65	2 75
Mariposa	18		N. Y. & Eldorado	40	
Mariposa preferred	43	44½	Eagle Gold		
Rocky Mountain Gold			Benton Gold	45	50

SILVER STOCKS.

Combination Silver		Quicksilver	
Owyhee Mining	10 00	Atlantic and Pacific	

COPPER STOCKS.

Central	....	Davidson	35
Calumet		Hilton	....

LEAD STOCKS.

Walkill	20	Wallkill assented	50

COAL STOCKS.

Cumberland	30	Am. C. Co., bet. call	
Spring M. Coal, bet. call		Lehigh & Susquehanna Coal	....

PETROLEUM STOCKS.

	Bid.	Asked.		Bid.	Asked.
Bennehoff Run	..		Rynd Farm	16	20
Brevoort		1 50	United Pet. Farms	80	50
Buchanan Farm	56	60	Union	....	....
Central	90	92	United States	1 25	1 75
Clinton Oil		....	Sherman & Barnsdale	..	..
National		....	Second National	.. ..	.. ..
N. Y. and Alleghany	..	....	Bliven	.. ..	.. ..
Pithole Creek	1 25	1 75	Rathbone	.. ..	.. 45
Home Petroleum	12 00	12 20	Northern Light	.. ..	.. ..
Pacific Oil	..	....	Bergen Coal and Oil	..	..

MISCELLANEOUS STOCKS.

Rutland Marble	$21 12 @ 8	Chi. & Northwestern	87½ 87½
Western Union Tel	43½@	Lake Shore Railroad	102½
Pacific Mail S	93½ 94½	Clev. C. & In. Railroad	67 68
Del. & Hudson Canal	130	Mil. & St. Paul Pf	86½ 86½
Adams's Express	62	Tol. W. & W. Pf	79
Boston Water Power	16	Del. Lack. & W	115½ 116
Wells, Fargo Ex	86 @ 86½	New Jersey Central	111½
Am. M. Union Ex	41½	Chi. & Alton Railroad	161½
N. Y. Central	175 175½	Chi. & Alt. Rail'd Pfd	161½
Hudson River	156	H. & St. Jos. Preferred	118
Harlem Railroad	148 150	H. & St. Jos. Railroad	115 116
Reading	97½	C., Cin. & Ind. C	49
Mich. S. & N. I	103½ 103¾	Ohio & M. R	33½
Clev. & Pitts., b10	93	D. & Sioux C, bet call	115

State, R. R. and Other Bonds.—Tenn. St. 6s, new, 68@68½; Va. St. 6's, ex cpn., 58½@59; Va. 6's, new, 62½@63; Georgia 7's, 96; N. Car. St. 6's, 61½; N. Car. St. 6's, new, 54½@55; Missouri 6's, 85½; Louisiana 8s, Levee bds, 89½; Louisiana 6's, Levee bds., 73; Brooklyn 6's W. Loan, 95½; Erie 2d, '79, 94; Erie 4th, 80; N. Q. C. 6's, '83, 92; Mich. S. 2d m., 94½; C. & N. W. con Conv'e. Bbs., 97½@98; Del. L. & W. 1st m., 93½; Tol. & W. con con'e. bds., 83@83½; Mor. & Es. 1st, 99½; M. & E. 2d, 92; Clev. & Tol. S. F. Bds., 99; Ch. & Alt. 1st, 101½; Col. C. & Ind. Cent. 1st, 86½@86½; Col. C. & Ind. Cent. 2d, 81; New J. Cent., new bds., 98; Mil. & St. P. 1st m., 91½; Tol. P. & War. 1st East. Div., 87; Chi. & N. W. S. F. B., 97; Ocean Bk., 105½; Continental Bk., 101; Cen. National Bank, 110½.

Government Bonds.—The market is firm, and prices are considerably advanced. We quote:

U. S. 6s, 1881, coupon	118½@118¾	U S 5-20s, '65, new coup.	116¾ 116¾
U. S. 5-20s, 1862, coupon	121¾ 122	U. S. 5-20s, 1867, coupon	116¾ 116¾
U. S. 5-20s, 1864, coupon	117¾ 117¾	U. S. 5-20s, 1868, coupon	116¾ 116¾
U. S. 5-20s, 1865, coupon	119½ 119¾	U. S. 10-40s, ex coupon	108 108¼
Pacific R. R. 6 per ct. bds	106½ 106¾		

Foreign Exchange.—Foreign exchange is active. We quote:

Lon. (pr. bks), 60 dys	109 @	Swiss	5.21¼ 5.18¾
Lon. (pr. bks'), sight	109 109¼	Hamburg	35¾ 35¾
London, prime com	108¾ 108¾	Amsterdam (bankers')	40¼ 40¼
Paris (bankers'), long	5.18¾ 5.17½	Frankfort (bankers')	40¼ 40¾
Paris (bankers'), short	5.16¾ 5.15	Bremen (bankers')	78¾ 78¾
Antwerp	5.21¾ 5.18¾	Berlin (bankers')	71 71¼

Gold—Gold ranged during the morning at 134¼@134¾.

The following are the quotations for other coin.

American silver	95¼@ 95¾
Mexican dollars	102¾@103¾
English silver	475 @480
Five francs	95 @ 96
English sovereigns	485 @488
Twenty francs	382 @385
Thalers	70 @ 70½

Money continues in liberal supply, at 6@7 per cent. on demand notes, and 7½@10 per cent. on aiscounts of prime paper.

We have overland San Francisco advices of the 16th ult. The following is the latest financial intelligence:

Our local money market is very stagnant; more so than at any period for years. Some of our savings and loan institutions have ceased loaning on any security, having only funds enough on hand to meet the possible demands of depositors, showing a healthful condition of affairs. For some time past their spare balances have been rapidly taken at 11 per cent. per month. Independent of local causes, this market has been considerably influenced by the extreme pressure at the East. Gold has been in such unusual demand there that California funds have been retained in New York, and in many cases duplicated and triplicated remittances made to that city. Our refineries are hard at work to supply the Branch Mint, which is kept going to the full extent of the bullion offered for coining. Our quotations are as follows; Bullion is in fair supply, gold bars ranging from 890@900; silver bars remain steady from par to 1½ per cent. prem.; currency bills on Atlantic cities pay 29@29½ per cent. premium on gold; coin drafts 1 per cent. premium. There is nothing doing in telegraphic transfers, which are quotable at 3½ per cent. premium; sterling exchange, 48½d.; commercial exchange 49½d.; Mexican dollars, 6½@7½ per cent. premium; Gold in New York, April 15th, 132½; legal tenders with us, 76½@76¾.

The exports of treasure from April 1 to date have been as follows:

January 4—Per Great Republic:		
To China	$322,526 52	
To Japan	168,710 82	
		$491,237 34
April 1—Per Constitution:		
To New York	$685,767 35	
To France	31,970 84	
To Panama	20,000 00	
		737,738 19
Total since April 1, 1869		$1,228,975 53
Previously this year		10,370,038 36
Total since January 1st, 1869		$11,599,013 88
Corresponding period, 1868		11,196,369 57
Increase this year		$402,614 31

Petroleum—The market for refined has, perhaps, a little more tone, but the business is still quite limited, the sales being merely to fill a few export orders. The business includes two lots, 250 bbls. each, at 32c.; 1,500 bbls, at 32½c.c. Crude in bulk is held at 17½c. For Philadelphia delivery the market is moderately active without essential change in prices. Sales are 4,000 bbls. refined standard white for the balance of the month at 31½c.; 1,000 bbls. do. for first half May at 32c., and 1,000 bbls. do. for last half May at 31½c.

Exports for the week ending April 27	galls.	1,374,867
Exports from Jan. 1	galls.	16,467,819
Exports same time last year	galls.	12,349,283

The following is the quantity exported from other ports, Jan. 1 to April 24.

	1869.	1869.
From Boston galls.	999,799	624,485
Philadelphia	5,833,852	7,480,109
Baltimore	465,891	557,965
Portland	....	19,072
Cleveland	....	....
Total	6,734,252	8,621,611
Total exports from the United States	23,147,965	21,212,483
Same time in 1867		14,715,342
Same time in 1866		14,995,920

Copper is steady, with quite a large business for future delivery at 24¾. Sales of 4,000,000 pounds Lake Superior, May to August delivery, at 24@24½, and 500,000 pounds, cash, at 23½c. for Baltimore, and 23½c. for Lake.

The London market has improved to £72 for Chili Bars.

Tin is in better demand. Sales 1,500 slabs, Straits, on the spot, 33c., gold; 2,000 lbs., to arrive in Boston, 12¾. Banca nominally, 36c; English, 31½.

The London market advanced to 183s. for Straits. Banca and Amsterdam, 88fl.

Spelter is quoted at 6½, gold, for Silesian.

Lead $6 25@$6 35, gold, for ordinary foreign.

Plaster Paris—White Nova Scotia Lump is in full demand at $4 50@$4 75, cash.

Lime—Rockland continues in good demand at $1 25 for Common and $2 for Lump.

Zinc—We quote French Dry at 11½@11¾c.; American Dry 7½@8c.; metal 12@12½c.

THE IRON TRADE.

NEW YORK, April 30, 1869.

The demand for American pig iron is somewhat more active, but transactions continue light with moderate offerings. 100 tons No. 1 Thomas sold at $42; 800 do No, 2. ex., 200 do. Gray Force, and 150 do. White, on private terms.

Scotch pig continues in request, but with limited arrivals and a light stock, the demand is confined to small parcels from yard at full rates; we notice sales of 150 tons Summerlee on private terms, and Englinton, in lots, $41, from yard.

Wrought Scrap is in moderate inquiry, and we notice sales of 100 tons at a private price. Few rails continue in request, and prices are a shade higher; 1600 tons sold at $54.50 @ $55 gold. Old Rail may be quoted nominally $35 gold; the price has advanced in England, and they would now cost considerable more to lay down here. 100 tons old Car Wheels sold on terms we did not learn. Bar from store shows no improvement in demand, and no change in price.

Market Prices.

NEW YORK, April 30, 1869.

DUTY.—Bars, 1 to 1½c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate: 1½c. per lb.; sheet, band, hoop and scroll, 1½ to 1¾c. per lb.; pig, $9 per ton, polished sheet, 3c. per lb. Payable in gold.

DUTY ON STEEL.—Bars and Ingots, valued at 7 cents per lb. or under, 2½ cents; over 7 cents and not above 11, 8 cents per lb.; over 11 cents, 2½ cents per lb. and 10 per cent. ad val. (Store prices.)

Am. pig, fy. No 1, best, $40 00@42 00		STORE PRICES—Less 5 per cent.	
" " 2x frdy, 38 00 40 0		Bar, Swedes, ord'y sizes — —	140 00
" Grey Forge 35 00 37 00		Bar, Eng. and Am., rf'd.	92 50
White and Mottled 32 00 34 00		Bar, Eng. & Am., com. 85 00	87 50
Pure white for Cal. mar. 32 50 — —		Scroll	120 00 150 00
Scotch Pig, No. I, best bd 40 00 44 00		Ovals and half round	117 50 142 50
" " outside, 40 00 — —		Band	117 50 — —
Wt. No. 1 Scrap f'm yd. 47 50 50 00		Horse Shoe	117 50 — —
Ex ship	45 00	Rods, ¼@3-16 inch	97 50 155 00
Bar, Ref., En. & Am.	85 00 90 00	Hoop	125 00 180 00
Bar, Sw's, as. sizes, gold	82 50 87 50	Nail Rod, per lb	8½ 9½
Old Rails	47 50 — —	Sheet, Rus. as'd. Nos. (gold)	11½ 18
R.R. Iron, For., fm Stock gold	54 50 55 50	Sheet, s'gle. D & T. com	5½ 6½
R. R. Iron For., to imp.	55 00 00 00	Rails, Eng., gold, ton.	55 00
" " Amer. at wks. currency	75 00 76 —	Rails, American at w'ks	76 00
R. R. Iron, Am., deliv'd	78 00 80 00	STEEL.	
Stt rails of any pattern at works, currency	— — — —	English, cast 2d & 1st qual.	18 @22
Solid Steel rls. For., gd.	95 — — —	Eng. Spring 2d & 1st qual	9 11½
Street Rails at works	85 00 — —	Eng. Blister 2d & 1st qual.	11½ 19
Light rls. for mines &c. at works	$85 00@— —	English Machinery	12½ 15
Do. delivered here	— —	Eng German 2d & 3d qual.	14 16
		Am. Blister, "Black Diam'd,"	10½ 16
		American, Cast, Tool "	19 —
		American, Spring "	10 18
		American Machinery "	— 18
		American German "	10 18

Lehigh Valley Iron Trade.

Pig Iron transported by the Lehigh Valley Railroad Co. for the week ending April 24, 1869:

From	Tons.	Total.
Carbon Iron do	180	
Lehigh Valley Iron Co	270	
Thomas Iron do	1,016	
Lehigh Crane Iron do	845	
Allentown Iron do	495	
Robert Iron do	160	
Glendon Iron do	455	
Bethl'm Iron Co	50	
Other Shippers	400	
Total		3,865

THE COAL TRADE.

NEW YORK, April 30, 1869.

The market is very much excited to-day over a rumor that the so long threatened strike in the coal regions will take place on the 1st of May; in fact, we have reliable telegrams confirming the rumor. Coal is consequently held firmly, and very few dealers have any for sale. The miners consider this the only method of forcing the price of coal up, and getting an increase in their wages. The operators and shippers do not heed this action of the men, inasmuch as they will take care that the benefit will be to them in the same proportion. There is very little satisfaction in all this, however, to a consuming public, who desire cheap fuel. We have advocated that $8 was a fair price for coal, and it will be found that unless it is kept at about this figure, we shall have these strikes more or less; for at a lower figure neither miner, operator or dealer can make money. The carrying companies insist upon a dividend paying rate of freight, and as they are all monopolies in the various districts (that is, have entire control of the carrying of coal), we have to give them their own way. Thus all hands banded together, the prospects for cheap coal this winter are poor.

The 73d Scranton Auction Sale took place on Wednesday last. The attendance was full, and the bidding spirited. An advance of 23 cents per ton, on an average, was obtained over last month. This was caused by the issuing on Tuesday last—day prior to the sale—by the Philadelphia and Reading Railroad Company of a new set of drawbacks on coal shippers from Port Richmond (Philadelphia), to points east of New Brunswick, and south of Cape Henry, amounting to some 30 cents per ton. Eastern dealers were, consequently, on hand, and bought heavily, as their prospects for getting coal from Philadelphia, except at a higher figure, were poor. Below we give a report of the coal sold, compared with the March sale.

AUCTION SALE OF COAL.

	March 31.		April 23.	
Lump	$4 30 @4 37½		$4 62½@4 77½	
Steamboat	4 45	4 47½	4 55	4 75
Grate	4 45	4 50	4 65	4 70
Egg	4 62½	4 65	4 75	4 77½
Stove	4 85	5 05	5 05	5 25
Chestnut	4 57½	4 62½	3 72½	3 85

The new drawbacks on the Philadelphia and Reading Railroad are as follows:

Lump	90 cents
Steamer	90 cents
Broken	70 cents
Egg	70 cents
Stove	50 cents
Chestnut	70 cents

They are to take effect on and after May 3d.

We desire to call the attention of coal dealers to the fact that Tyler & Co., room 16, 111 Broadway, have recently been appointed sole agents for the sale of the celebrated Duncan Coal Company's Red Ash coal, together with J. J. Connor's Locust Mountain coal.

All the new prices will be quoted next week.

The following will show the exports of coal from the port of New York for the week ending April 27, and for the season to that date, also the amount exported last year for the same period.

Exports for the week	tons	1,501
Do. from January 1	do	23,498
Do. same time last year		15,888

The following table exhibits the amount of Coal that was passed over the various routes of transportation from the Pennsylvania Coal districts for the week ending April 24, 1869, and for the season to that date. A comparison is also made with the amount transported the corresponding week in 1868, showing the increase or decrease, as the case may be:

	1868.		1869.		INC. OR DEC.	
COMPANIES.	WEEK.	TOTAL.	WEEK.	TOTAL.	WEEK.	YEAR.
Phil. & Read. R. R.	81,887	928,490	92,292	1,082,874	↑ 10,405	↑ 104,084
Schuylkill Canal	29,432	113,459	25,771	115,414	↓ 3,661	↑ 1,955
Lehigh Valley R. R	52,792	775,151	54,335	825,547	↑ 1,543	↑ 50,696
Lehigh & Sus. R. R	19,981	128,170	33,096	325,900	↑ 13,115	↑ 197,730
Lehigh Canal	24,791	49,001	32,517	96,327	↑ 7,726	↑ 47,326
Scranton North	6,997	117,543	11,488	161,122	↑ 4,491	↑ 43,579
Scranton South	22,606	330,668	28,702	472,640	↑ 6,196	↑ 141,972
Penn. Coal Co. rail	19,946	199,891	21,495	242,009	↑ 1,549	↑ 42,118
Penn. Coal Co. can	586	1,513	790	1,306	↑ 204	↓ 207
*Del. & Hud'n Rail	....	....	5,282	84,093	....	....
Del. & Hud. Canal	51,557	184,503	44,034	180,847	↑ 7,523	↑ 3,656
Shamokin	10,186	111,791	9,455	106,132	↓ 701	↓ 5,658
Trevorton	668	5,669	570	6,906	↓ 161	↑ 1,237
Short Mountain	2,690	19,975	2,665	21,160	↑ 175	↑ 1,184
Lykens Valley Co.	1,266	128,738	1,415	14,402	↑ 148	↓ 9,336
Hunt'g'n & B'd T'p	5,410	53,178	6,390	56,274	↑ 980	↑ 32,096
*Wyoming South.	....	....	....	....	....	....
*Wyoming North.	....	....	....	....	....	....
Williamstown Col.	3,845	44,087	4,943	50,244	↑ 1,078	↑ 6,157
Total	334,440	3,036,857	376,270	3,773,439		
1868			334,440	3,036,857		
			↑ 42,830	↑ 736,582		

*Closed.

Lehigh Canal Coal Trade.

Shipped for the week ending April 24, 1869.

WHERE FROM.	WEEK. Tons. Cwt.	TOTAL. Tons. Cwt.
MAUCH CHUNK.		
Lehigh Coal & N. Co	....	....
Summit Mines	9,576 08	28,056 04
Room Run Mines	813 04	1,340 02
Total Mauch Chunk	10,389 07	29,396 06
BEAVER MEADOW REGION.		
W. T. Carter & Co	948 11	2,454 18
Spring Mountain Coal Co	665 07	1,953 17
A. L. Mumper & Co	276 17	1,489 16
Honey Brook Coal Co	2,160 09	6,474 09
German Pa. Coal Co	552 01	1,520 10
Other Shippers		88 00
Total Beaver Meadow Region	4,803 05	13,958 09
MAHANOY REGION.		
McNeal Coal & Iron Co	....	....
Knickerbocker Anthracite Coal Co	98 10	98 10
North Mahanoy Mines	....	....
Delano Mines	90 10	90 10
Primrose Mines	....	....
Walter Brothers & Co	....	....
Mount Etna Coal Co	....	....
Trenton Coal Co	....	....
Thomas Coal Co	....	....
Williams & Herring	....	....
New Boston Coal Co	90 10	60 05
Copley Coal Co	....	....
Mount Carmel	....	....
Other Shippers	10 00	96 10
Total Mahanoy Region	199 00	345 15
HAZLETON REGION.		
A. Pardee & Co	1,549 12	7,890 02
G. B. Markle & Co	1,740 19	2,863 19
Wm. S. Halsey & Co	98 15	98 15
B. Mountain Coal Co	766 04	2,138 06
Sharpe, Weiss & Co	1,226 18	8,392 12
Coxe Brothers & Co	280 09	1,220 07
Ebervale Coal Co	1,092 18	4,102 00
Stout Coal Co	1,295 09	2,303 02
Harleigh Coal Co	948 03	2,764 00
Asburton Coal Co	183 15	818 05
Highland Coal Co	....	....
Jeddo Coal Co	....	....
Pardee Brother & Co	....	....
Mount Hall	....	....
Woodside	191 03	767 16
Latimer	189 06	377 14
Sugarloaf	....	....
Other Shippers	168 10	357 03
Total Hazleton Region	9,731 16	24,094 03
UPPER LEHIGH REGION.		
Upper Lehigh Coal Co	342 14	1,231 15
WYOMING REGION.		
Newport Coal Co	....	....
Valley Coal Co	....	....
Warrior Run Manufacturing Co	....	....
Parrish & Thomas	644 19	1,504 06
New Jersey Coal Co	412 15	1,125 01
Preston Colliery	....	....
L. & Susquehanna Coal Co	....	....
Germania Coal Co	466 00	1,405 05
Franklin Coal Co	....	....
Audnr'd Im't Coal Co	....	....
W. Barre Coal & Iron Co	2,429 18	7,961 06
Union Coal Co	....	....
B. H. Hillman & Son	142 00	370 18
Wyng C'l & Trns Co	....	....
Mineral Spring Coal Co	....	....
Henry Colliery	....	1,491 17
Everhart Coal Co	....	....
East Boston Coal Co	397 02	1,598 00
John Horton	....	....
Enterprise	433 19	1,262 02
Shawnee	751 18	2,924 05
Harvey Brothers	....	....
Consumers Coal Co	....	....
Delaware & Hudson Canal Co	62 10	62 10
Chauncy	186 12	858 16
Morgan Shaft	....	....
Berkley, Price & Co	....	....
Other Shippers	223 12	316 12
Pine Ridge	525 01	1369 07
W. W. Lance	66 15	383 09
New England	308 17	597 09
Total Wyoming Region	7,051 13	23,301 01

WHERE FROM.	TONS. CWT.	TONS. CWT.
Mauch Chunk Region	10,389 07	29,396 06
Beaver Meadow Region	4,803 05	13,958 09
Mahanoy Region	199 00	345 15
Hazleton Region	9,731 16	24,094 03
Upper Lehigh Region	342 14	1,231 15
Wyoming Region	7,051 13	23,301 01
Total	32,517 15	93,327 09
Corresponding week last year	24,791 00	49,001 06
Increase	7,726 15	47,326 03
Decrease	....	....

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	TOTAL. Tons. Cwt.	PREVIOUSLY Tons. Cwt.
Total Mahanoy	10,078 10	97,434 11	87,356 01
Total B. Meadow	12,421 07	141,760 15	129,339 08
Total M. Chunk		107 15	107 15
Total U. Lehigh	173 02	7,037 10	6,864 08
Total Hazleton	24,072 19	446,178 15	422,105 16
Total Wyoming	8,891 14	161,519 08	152,627 14
Total	55,637 12	854,038 14	798,401 02
To L. & S. R., at Penn Haven for r'l.		4,174 00	4,174 00
Do. for Canal	9,731 16	32,278 19	22,547 03
At Mauch Chunk for canal	5,002 05	16,475 11	11,473 06
Total Anthracite	70,371 13	906,967 04	836,595 11
Susquehanna region Bit. Coal, F. C'k.		552 03	552 03
Total by rail and canal	70,371 13	907,519 07	837,147 14
Same time last year	53,580 16	786,755 00	733,174 04
Increase	16,790 17	120,764 07	103,973 10
Decrease		....	

Forwarded east from M. Chunk by r'l	24,335 14	825,847 12	771,511 18
Same time last year	52,792 10	775,121 10	722,359 00
Increase	1,543 04	50,696 02	49,152 18
Decrease	....	....	....

RECAPITULATION.

Forwarded east from M. Chunk by r'l	54,335 14	825,847 12	771,511 14
Delivered at Mauch Chunk	9 11	545 15	536 08
Del. on line of r'd above M. C'k	124 18	4,302 04	4,177 06
Del. ab. M. C. for use of L. V. railr'd.	850 17	19,303 08	18,452 11
To L. & S. r'd at Penn Haven for rail		4,174 00	4,174 00
Do. for shipm't by canal. .	9,731 16	32,278 19	22,547 03
At Packerton	142 00	2,251 27	2,109 17
At M. Chunk for shipmen's by canal.	5,002 06	16,475 11	11,472 09
To N. C. R. R., at Mt. Carmel	174 12	2,340 01	2,165 09
Total	70,371 13	907,519 07	837,147 41

Lehigh and Susquehanna Railroad.

Report of Coal shipped for week ending April 24, 1869.

Total Mauch Chunk Region		2,033 08	59,379 17
" Hazleton		9,656 12	29,861 13
" Upper Lehigh		3,158 14	49,816 09
" Wyoming		18,248 02	186,842 12
Grand Total		33,095 16	325,900 11
Corresponding week last year		19,981 11	128,170 02
Increase		13,115 05	197,730 09
Decrease		....	....
Forwarded South from Mauch Chunk by Rail		14,722 11	346,668 10
Delivered on line of L. & S. R. R. ab've M'ch C'k.		1,092 15	12,580 12
Delivered to Lackawanna & Bloomington Railroad at Plymouth Bridge		540 09	9,563 15
Delivered to L. V. R. R. Co. at Sugar Notch			5,100 03
Delivered at Coal Port for shipment by canal		16,734 01	52,047 11
Total		33,096 16	325,900 11

Schuylkill Coal Trade.

BY RAILROAD AND CANAL, FOR WEEK ENDING, APRIL 29.

	RAILROAD.	CANAL
St. Clair	33,768	....
Port Carbon	9,444	9,548
Pottsville	3,040	1,330
Schuylkill Haven	31,194	13,188
Auburn	2,503	....
Port Clinton	14,096	907
Company's use	3,405	....
Total for week	97,453	24,973
Previously this year	1,032,874	115,414
Total	1,130,327	140,387
Same time last year	1,007,510	144,422
Increase	22,517	dec. 4,045

Cumberland Coal Trade.

By B. & O. RAILROAD.—The shipments over the Baltimore and Ohio Railroad, for the week ending April 24, were as follows:

From Cumberland and Pa. Railroad, via Cumberland	
Consolidation Company	3,769 02
Borden	1,234 16
Allegany	351 03
Midland	1,135 03
Midlothian	1,894 00
From George's Creek, via Piedmont.	
George's C. & I Company	1,226 04
Central	2,452 11
Atlantic	877 06
Savage Mt.	21 06
Swanton	868 19
Potomac	1,769 16
Piedmont	1,424 06
Franklin	1,259 07
Hampshire	1,259 07
American	1,197 09
Barton	1,410 09
From Eckhart RR.	
C. & I. Co.	1,594 00
Total	22,501 16

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, April 29, 1869.

Schuylkill R. A., choice	$ 6 00	$....	Schuylkill Chestnut	$....	5 00
" Ordinary	5 75	....	Lehigh W. A. Lump	6 00	....
" W. A. Lump	....	5 25	" Broken	5 35	....
" Steamboat	....	5 25	" Egg	5 35	....
" Broken	5 50	....	" Stove	5 65	....
" Egg	5 50	....	" Chestnut	5 15	....
" Stove	....	5 75	Shamokin	....	5 00

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R.A., Sch'kill	....	6 00	Old Co.'s W. A. Lehigh	....	....
Locust Dale W. A., "	5 75	....	Mt. Pleasant	5 50	....
Honey Brook " Lehigh	6 00	5 15	Buck Mountain	5 50	
Harleigh " "	6 00	5 15	Fulton	6 00	5 15
Spring M'n " "	6 00	5 15	Stout	6 00	5 15
Sugar Creek " "	6 00	5 15	New England Red Ash	....	....
Sugar Loaf " "	6 00	5 15	Duncan, R. A.	5 50	....

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, April 29, 1869.

Lehigh L'p and St'mb't	6 00		" Egg and Stove.		
" Broken and Egg	6 00		" Chestnut		
" Stove	6 25		Locust Mount Lump	4 00	4 25
" Chestnut	5 50		" Steamboat.	4 00	4 25
Schuylkill R. A.		5 00	" Broken	....	4 25
" Chestnut			" Egg	....	4 25
" W. A. Lump			" Stove	....	4 50
" Broken			" Chestnut	3 50	4

SPECIAL COALS.—DEALER'S QUOTATIONS.

Lorberry Coal	4 75	5 00	Burnside R. A. Egg & St.	4 75	5 00
Shamokin	4 75				
Franklin, (Lykens Val.)		5 25	Hill & Harris, Egg & St.		4 50
Broad Top	....	5 00	Henry Clay, Egg & St.	4 75	4 75

Dealers in these coals may be found in our advertising columns.

Powelton Coal at Philadelphia, April, 1869.

Powelton Egg and Stove	$5 25	Powelton Gas	$7 80
Powelton Semi Bituminous	5 00		

Scranton Coal at Elizabethport, April, 1869.

(Corrected weekly by D. L. & W. R. R. Co.

Lump	....	Egg	....
Steamer	....	Stove	....
Grate	....	Chestnut	....

Prices for Pittston Coal at Newburgh, April, 1869.

(Corrected weey by Penna. Coal Co.)

Lump, per ton, 2240 lbs.	....		Egg	" "	....
Steamer, " "	....		Stove	" "	5 00
Grate " "	....		Chestnut	" "	....

70c. Freight to New York.

Lackawanna at Rondout, April, 1869.

Lump	....	Egg	....
Steamer	....	Stove	....
Grate	....	Chestnut	....

65 cents Freight to New York.

Old Company's Lehigh Coal at Mauch Chunk.

April, 1869.

Lehigh L'p and Steamboat	$	Stove	$
Broken and Egg		Chestnut	

Lehigh Coal at Elizabethport, April, 1869.

Lump	....	Stove	....
Steamboat and Broken	....	Chestnut	....
Egg	....		

50c. Freight to New York.

Wilkesbarre Coal at Hoboken, April. 1869.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	....	Egg	....
Steamer	....	Stove	....
Broken	....	Chestnut	....

45 cents Freight to New York.

At Baltimore, April, 1869.

Wholesale prices to trade.		Trevorton R. A.	$	5 40
Wilkesbarre by cargo or car load	$ 5 60	By retail, per ton of 2,240 lbs., delivered	8 00	8 50
Pittston and Plymouth	5 40 5 65	Georges C'k & Cumberland f. o. b. at Locust Point for shipping	....	5 00
Shamokin R., or W. Ash	.... 5 40			
Lykens Valley, R. A.	.... 5 65			

At Havre de Grace, Md.

Cargo prices for shipment *south* of Patapsco River, (drawback allowed of 10 per centum.)

Wilkesbarre and Pittston W. Ash	$.... @....	Shamokin R. or W. Ash.	$.... @....
		Lykens Valley R. A.	....
		Trevorton R. A.	....

At Georgetown, D. C. and Alexandria, Va.

George's Creek and Cumberland f. o. b. .... @4 75

Prices of Gas Coals.

April, 1869.

PROVINCIAL. Duty, $1 25	Coarse. Gold.	Slack. Gold.	AMERICAN.	Coarse. Currency.	Slack. Currency.
Block House	$1 75 @$	75	Westmoreland Co	8 75	
Gowrie	1 75	75	Despard Coal Co	8 50	8 00
Lingan	1 75	75	Penn	....	
Sydney	2 13½	71½	Newburgh Orrel Gas	8 50	8 00
Pictou	2 13½	1 18½	West Fairmont Gas Coal	....	7 00
Little Glace Bay	1 50	1 00			
Caledonia	1 50	75			

Prices of Foreign Coals.

April.

Duty, $1 25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$ 9 50	Liverpool House Cannel	18 00 19 00
" " Cannel	14 00	" " Orrel.	16 00 18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD.

Liverp'l House Orrel, scr'd	$16@18	Liverp'l House Can'l, scr'd	$18 00 20 00

Per ton 2000 lb., delivered.

Coal Freights.

(Corrected Weekly).

Freights on Coal Sea-borne from Port Richmond, Philadelphia.

April, 29, 1869.— From Philadelphia and Reading R. R. Wharves, Phila., to

Bangor	....	....	New London	— —	1 80
Boston	....	2 50	Dover	— —	2 50
Providence	....	2 00	Cohasset Narrows	— —	2 50
Lynn	and discharging	2 50	Cambridgeport	— —	2 75
Portland	2 00	2 50	Dorchester	— —	2 50
Fall River	2 00	....	Fair Haven	— —	2 00
New Bedford	....	2 00	Gloucester	....	2 75
Salem	....	2 50	Lawrence	— —	3 00
Newport	— —	2 00	Old Cambridge	— —	2 53
East Cambridge	— —	2 50	Saco	— —	2 75
Newburyport	— —	....	Roxbury	— —	2 75
Portsmouth	— —	2 75	Salisbury	— —	2 75
Charleston	1 75	2 00	Greenport	— —	2 00
Danversport	and discharging	2 50	Norwich	— —	2 00
Amesbury	— —	2 75	Harlem	— —	1 45
Beverly	....	2 50	New Rochelle	1 30	1 40
Charlestown	....	2 50	Sag Harbor	— —	1 50
Hingham	....	2 50	Spuyten Duyvel	— —	1 35
Marblehead	....	2 50	Williamsburg	— —	1 35
Nantucket	— —	2 50	Jersey City	— —	1 35
Plymouth	— —	2 50	New Brunswick	— —	1 20
Provincetown	— —	2 25	Alexandria	— —	1 25
Washington	— —	1 25	Fredericksburg	— —	2 00
Calais	— —	2 75	Wilmington, Del.	— —	75
Machiasport	— —	2 75	Bath	....	2 50
Hoboken	1 35		East Greenwich	....	2 00
Hyannis	2 25		Albany	....	1 95
Malden	27 5		New York	....	2 10
Nahant	and discharge	2 50	Troy	....	2 10
Weymouth	and towing	2 50			

Provincial Freights.

TO NEW YORK.		TO BOSTON.	
Sydney	$3 50	Sydney	$3 00
Lingan	3 50	Lingan	3 00
Cow Bay	....	Cow Bay	....
Port Calidonia	3 50	Port Calidonia	3 00
Little Glace Bay	3 50	Little Glace Bay	3 25

From Elizabethport and Port Johnson.

Albany	$ 90@— —	New London	$1 15 — —
Boston	1 75 — —	Newport	1 40 — —
Bridgeport	1 — — —	New York	50 — —
Fall River	1 40 — —	Norwalk	1 — —
Hartford	1 50 — —	Norwich	1 25 — —
Hudson	1 00 — —	Pawtucket and towing	— —
Wareham	— —	Portland	1 75
Middletown	1 25 — —	Portsmouth	1 75
New Bedford	1 40 — —	Providence	1 40 — —
Newburyport	2 00 — —	Salem	1 75 — —
New Haven	1 00 — —	Augusta	3 00 — —
		New Orleans	3 00 — —

Foreign Freights.

New Castle and Ports on Tyne			£15@£18 keel.
Liverpool			18@20s. ton.
Australian	9 50@10 00	Lehigh	15 50@16 00
do. Wallsend	10 00 10 50	Liverpool	13 00 ..
Bellingham Bay	11 00 ..	Pittston, ton	14 50 15 00
California	7 00 9 00	Scranton	14 00 15 00
Cumberland cks	30 00 22 00	Scotch	13 00 ....
do bulk	28 00	Vancouver Island	12 50 ....
Chili	10 00		

Rates of Transportation to Tide Water.

[BY RAILROAD.]

To Port Richmond, Philadelphia.

Philadelphia and Reading Railroad, from Schuylkill Haven $2 00

The following are the drawbacks allowed on all coal shipped East of New Brunswick and South of Cape Henry, until further notice.

	Drawback.	Freight.	Nett
Lump	90	$2 ..	$1 1
Steamboat	90	2 ..	
Broken	70	2 ..	10 0
Egg	70	2 ..	1 30
Stove	50	2 ..	1 50
Chestnut	70	2 ..	1 00

From Port Carbon, 8 cents per ton more.

To Elizabethport.

L. V. Railroad from Mauch Chunk to Easton	$ 81
C. R. R., N. J., Easton to Elizabethport	1 22
	2 03
Shipping Expenses at Elizabethport	25
Total	2 28

To Port Johnson.

L. V. R R.	$ 81
C. R. R. of N. J.	1 29
Shipping Expenses	25
Total	2 35

SAN FRANCISCO STOCK MARKET.

A telegram from San Francisco, dated April 29, quotes:

STOCKS.	Per Sh.		SHARES.	Per Sh.	
Gould & Curry	119@		Belcher	23½	21
Savage	95	98	Imperial	77	78
Chollar Potosi	247	250	Alpha	37	39
Hale & Norcross	143	150	Amador		..
Crown Point	68		Kentuck	272	..
Yellow Jacket	67	68	Ophir	35	34

DIVIDEND—Savage Mining Co.—$4 in coin per share. Payable 10th inst.

Interesting Notes from White Pine.

The correspondent of the San Francisco *Times*, at White Pine, contributes some notes upon the mines that may prove interesting. He writes from Treasure City as follows: "Though it would take a book to convey any definite idea of a country possessing so many peculiarities as this, in which the best miners are puzzled at every turn, and which seems to render all mining experience of no value, I will, nevertheless, give you my opinions, so far as I have formed them, of this region, and attempt to give you some general idea of its peculiarities. Treasure City is the mining town, and is located on the westerly side of Treasure Hill (it is really a very high mountain), near its summit, and is about two miles from Hamilton, which is situated in the canyon—it can hardly be called a valley—at its northern base. Treasure Hill is the home of storms, and while the sun smiles in the valley, the tempest rages here. It is, with the exception of ore, quartz and spar, one vast mountain of limestone, which crops out in great masses everywhere, save where the vegetable mold has covered it. The western slope of the mountain is quite steep; the upper portion of it was once sparsely covered with mountain mahogany and pine; but that has all been cut away, and it is now as barren as the road to the infernal regions, while at and near the base much timber fit for firewood, and some that will do for lumber, still remains. The eastern side of Treasure Hill pitches off very abruptly at first, and great masses of limestone stand out and hang over the rocks and trees below. There is no water here—none nearer than Hamilton, which is obtained from a small spring, and for which we pay 10 cents per gallon. There is a water factory here, however, which runs when there is snow enough to run it; and for snow water we pay 25 cents per gallon. We don't wash much, and whisky isn't a bad beverage, you know, for a new country where water is scarce. As to the mines. The Virginia mine, which was purchased by McDonald and Loveland, is situated on the northern slope of Treasure Hill, about half way between this place and Hamilton, and is the farthest mine north which has yet attracted much attention, though beyond it are claims from which some good rock has been taken, and which look fully as well as the Virginia Lode did when no more work had been done upon it. The Virginia has yielded some very rich ore, and gives evidence of being a first-rate mine. They are now doing dead work on it, I believe. The southern extension of the Virginia has been purchased by San Francisco parties, but no work has yet been done upon it.

"The next claim south of much note is the Hidden Treasure, which is located on the top and north end of the mountain, and the works are only a few feet from the eastern brow. It probably has nothing to do with the Virginia, but is on a separate ledge or deposit. The Hidden Treasure is now opened in several places, and a large amount of rich ore has been, and still is being taken out. The mine has steadily improved since work was first begun upon it. From what I can learn I suppose that the ore which has been saved for milling has averaged about $300 per ton. There is now much good ore in sight, and it is certainly a splendid mine. A few hundred yards down the steep bluff, east of the Hidden Treasure, is the Emersley mine. It is very rich, and the deposit of ore very extensive. This is the same mine of which E. W. Blasdel bought one-fourth. South of the Emersley, I should judge about fifteen hundred feet, the Pocotillo mine is situated. It is rich, and large bodies of fine ore is exposed to view in it. There can be no reasonable doubt of its value; still they have only struck down upon it about eighteen feet. It certainly has no connection with any of the mines on the west side of the mountain, but may possibly be on the same ledge as the Emersley, but does not conflict with it. The Pennsylvania and California claims (we are now on the west side of the mountain again remember), were located as the southernly extension of the Hidden Treasure, but they have not been opened yet to any extent—only a few shallow holes sunk. They are in the hands of parties who have neither no energy or the capital to develop them; though I doubt not that a few hundred dollars, well expended, would render them paying mines. The next claims south, of note, are the Aurora Consolidated, and the South Aurora—the former being a consolidation of the Aurora North, the Iceberg and Last Chance. Both of the Aurora's are splendid mines, and from the works of the Aurora South, which are upon the line between the two companies, a large amount of fine ore has been taken out, and the mine is now looking better than ever—yielding large quantities of very rich ore. The Aurora South was sold to A. P. Stanford for the sum of one hundred and twenty thousand dollars. About two hundred and fifty yards down the hill, westerly from the Aurora works, is a little flat of about fifteen acres, called the Chloride Fat. This flat seems upon the surface to be nothing but a stratum of limestone, lying nearly horizontal, but inclining a little to the west. Upon cutting through this stratum of limestone, which is in most places quite thick, a deposit of the richest chloride ore is found nearly flat, more like a coal vein than a deposit of silver ore. Nearly every shaft which has been sunk upon this flat (and some of them are over twenty feet, I think) have struck rich chloride ores, which will mill several hundred dollars per ton. About four hundred yards south of the Aurora works the mountain breaks off abruptly, and about one hundred and fifty yards below the brow of this break lies the wonderful Eberhardt mine, of which you have had already many accounts, and which I will therefore not attempt to describe. I will, however, say that the vastness of the wealth of this mine is incomprehensible, and I have no doubt of its being the richest mine in the world. Strange as it may appear, some of the ore is actually too rich to mill, as it will not pulverise on account of its being so nearly pure silver, but only jams and flateens in the battery.

"Many of the ledges on the west side of Treasure Hill, in fact almost all of them, appear, and are inclined to be nearly flat but inclining with the surface. There are no clay wearings or linings separating the ore from the lime rock. On the easterly side of Treasure Hill many of the ledges appear to lie quite flat, while others stand nearly straight and strike directly across the flat ones. *Things are mixed here*, and the true dip and strike of ledges in this district are not yet determined, nor can they be until the country is more fully developed. Thus far, I have only spoken of the Mines of Treasure Hill. In the next range, west of here, about a mile away, the ore is not so rich, and is full of base metals, very difficult to work, and can only be successfully treated by smelting. They are in what is known as the Base Metal Range. Many of these metal ledges are well defined, of good size, and I think that some of them may prove valuable; but I am not much on the base metal question myself. As to the permanency of the mines on Treasure Hill, I can only say that they may not prove of as great extent as the Comstock Ledge, but still after many careful examinations of them and much thought on the subject, I can see no reason why they may not last for a long time. The great argument against their durability is that they are in a limestone formation and are not in 'true veins.' Now, the only reason given for mines in limestone formations not being permanent is, that the formation itself is not permanent, and that when the formation fails, the mines must also fail. Experience teaches that such is frequently the case. But here the formation appears to be permanent, it is considerably over a thousand feet thick, and no one can tell how much thicker; the mountain is limestone, apparently, and if the mines do not give out until the mountains does we need have no fear of a failure of the mines at present. I know of no mine out of which any good ore has been taken which has failed or gives any indications of being about to fail Still you must remember that this country is far from being prospected yet, that it is peculiar and not well understood, and though most of us here are full of hope and confidence, still the croakers may be right. One thing is certain, however, we have more and richer ore here in sight considering the amount of work done; there are more paying ledges and good indications, and the ore is more readily found than in any country which I have ever seen or heard of."

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NEW YORK, SATURDAY, MAY 1, 1869.

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In consequence of a new regulation recently adopted by the Postmaster of this city to facilitate the early delivery of mail matter, we have to request our correspondents, in addressing us, to give the number of our post-office box, No. 5,969, in lieu of, or in Connection with our business office address. Also, write JOURNAL OF MINING, instead of *Mining Journal*, to ensure safe carriage.

THE HEATON PROCESS.

A lively discussion has been going on for some time in England, over the merits of Mr. HEATON'S process for the production of steel and wrought iron from pig. Without joining either party in a dispute which involves even the truthfulness of alleged experimental data, we propose to give our readers a brief statement of the characteristics and the claims of the HEATON process, and its relations to the ordinary methods of steel and bar manufacture, as well as to those of BESSEMER and ELLERSHAUSEN.

The old methods for the manufacture of steel required first the production of wrought iron, and then the carbonization, by cementation or otherwise, of the latter. For the preparation of large quantities, of uniform quality, the recasting of steel in crucibles was necessary, until the invention of puddled steel; and to this day cast steel is relied upon to furnish the materials for fine work, and even, in some cases, for tyres, etc. No objection is made to the quality of crucible cast steel; but its great cost prevents its application to many purposes for which a better material than iron is desirable. Puddled steel, on the other hand, is considerably cheaper, but its quality is not so good.

Mr. BESSEMER, "converting," at one heat, the crude pig into steel, has taken the world by storm, and established his product as a commercial and mechanical necessity. It is, however, a natural consequence of the rapidity of the process, that the original impurities of the pig are likely to reappear in the steel, whereas the former more laborious manipulations had the effect of removing them to a greater or less extent. As our readers are well aware, the BESSEMER process consists in depriving the melted pig of its carbon by means of injected atmospheric air, and then recarbonizing it to the extent required to make steel.

Mr. ELLERSHAUSEN, if we comprehend his method, attempts to mix with the melted pig a certain quantity of iron ore, generally the magnetic oxide, calculating this quantity, so that the oxygen of the ore will unite with and remove just enough of the carbon of the pig, to leave the residue steel or wrought iron, as may be desired. Both this and the foregoing method are applicable to the conversion of large masses at a time; and we fancy it will be found true of ELLERSHAUSEN'S, as it certainly is of BESSEMER'S, that the excellence of the product largely depends upon the purity of the crude material.

Mr. HEATON'S method differs from the other two named in employing nitrate of soda (Chili saltpeter) as the oxidizing and decarbonizing agent, instead of atmospheric air or crude oxides of iron. Like them, it aims at the conversion of large masses; but, unlike them, it is claimed to be effectual in "producing good useful steel and wrought-iron from *impure* pig." If this claim is thoroughly sustained in practice, even though the cost of the operation may exceed somewhat that of the competing method, the HEATON nitrate process will be a great boon to the manufacturing world in general, and to certain iron districts in particular, such as the Cleveland district, the impurity of the ores of which disqualifies them for the production of BESSEMER steel.

The *modus operandi* is sketched as follows, in a preliminary report of Professor MILLER, describing certain experiments performed in the presence of himself and Dr. MALLET, July 10,1868:

"Six and one-quarter hundred weight of Clay Lane forge pig, No. 4, were charged into a hot cupola which contained no other iron; and immediately 6 1-4 cwts. of Stanton forge pig, No. 4, (produced from 2-3 of Northamptonshire brown ore, 1-6 of Chesterfield clay ore, and 1-6 of puddling cinder) was added, and the whole when melted, was drawn off into a ladle, from which it was transferred to the *converter*.

"The 'converter' is a wrought-iron pot, lined with fire-clay. In the bottom of it was introduced a mixture of 169 lbs. of crude nitrate of soda, 40 lbs. of siliceous sand, and 20 lbs. of air-slacked lime; but these proportions in practice are varied considerably. On the top of this mixture a cast-iron perforated plate, weighing 95 lbs., was placed. The converter was then securely attached to the open mouth of a sheet-iron chimney, and the melted iron from the cupola (sample of this marked No. 4) was poured in.

"In about two minutes a reaction commenced; at first a moderate quantity of brown nitrous fumes escaped, these were followed by a copious blackish, then grey, then whitish fumes, produced by the escape of steam, carrying with it, in suspension, a portion of the flux. After the lapse of five or six minutes, an intense deflagration occurred, attended with a loud roaring noise, and a burst of brilliant yellow flame from the top of the chimney. This lasted for about a minute and a half, and subsided as rapidly as it commenced. When all was become tranquil the converter was detached from the chimney, and its contents were emptied upon the iron pavement of the foundry.

"The crude steel was in a pasty state and the slag fluid; the cast-iron perforated plate had become melted up and incorporated with the charge of molten metal.

"The slag had a glassy, blebby appearance, and a black or dark green color in mass."

According to the same authority, subsequent analyses showed that the reaction with the nitrate of soda had removed a large proportion of the carbon, silicon and phosphorus, as well as most of the sulphur in the original pig. It is claimed that these impurities unite with oxygen from the nitric acid, and are converted into compounds which combine in turn with the sodium, and finally enter into the slag and are thus eliminated from the commercial product. Professor MILLER says, "this action of the sodium is one of the peculiar features of the process, and gives it an advantage over the oxidizing methods in common use."

Dr. MALLET affirms:

"1st. That Heaton's patent process of conversion by means of nitrate of soda, is in all points in perfect accord with metallurgic theory. That it can be conducted upon the great scale with perfect safety, uniformity and facility, and that it yields products of very high commercial value.

"2nd. That in point of manufacturing economy or cost it can compete with advantage against every other known process for the production of wrought-iron and steel from pig-iron.

"3rd. Amongst its strong points, however, apart from and over and above any mere economy in the cost of production are these:—It enables first class wrought-iron and excellent steel to be produced from coarse, low-priced brands of rude pig-irons, rich in phosphorus and sulphur, from which no other known process, not even Bessemer's, enables steel of a commercial value to be produced at all, nor wrought-iron, except such as is more or less either "cold-short" or "red-short." Thus wrought-iron and cast-steel of very high qualities have been produced in my presence, from Cleveland and Northamptonshire pig-irons rich in phosphorus and sulphur, and every iron-master, I presume, knows that first-class wrought iron has not previously been produced from pig-iron of either of these districts, nor marketable steel from them at all.

"Heaton's process presents therefore, an almost measureless future field in extending the manufacture of high class wrought iron and excellent steel into the Cleveland, and other great iron districts, as yet precluded from the production of such materials by the inferior nature of their raw products. It admits of the steel manufacture also being extended into districts and countries where fuel is so scarce and dear that it is otherwise impossible."

Numerous tests have been made to settle the question of quality and uniformity in the products, and the results are pronounced satisfactory by the experimenters. In the case above described, the pig in the cupola contained 0.113 per cent. of sulphur, 1.455 per cent. of phosphorus, 0.041 of arsenic and 0.318 of magnesia, with 2.950 of silicon and (a little) titanium. The aggregate of impurities amounted to 4.877, and the carbon to 2,830 per cent., leaving 92.293 iron. In the crude steel, carbon is reduced to 1.8, silicon to 0.266, sulphur to 0.018, phosphorus to 0.298, arsenic to 0.039 and manganese to 0.090, while two strange ingredients, not in the cupola pig, make their appearance; calcium 0.319, and sodium 0.144. It is this steel, the quality of which is said to be excellent.

Possibly Mr. HEATON makes a mistake in attempting to compete with BESSEMER, as to absolute cost, at least for the present. In attempting to work cheaply, before all the conditions necessary to complete metallurgical success have been comprehended, he runs the risk of losing what is the main point, after all. The claims of his process have been violently disputed, and only operations on a large scale can decide them. But certainly it seems to us to demand more manipulations than that of BESSEMER, since the crude viscous steel from the converter has to be either hammered or forged into blooms after re-heating in a reverberatory, *or cast, after re-melting in crucibles*, before it is reduced to the marketable form of ingots or bars. No doubt, by these manipulations, both the purity and the cost of the steel are enhanced.

There are many suggestive points of metallurgy and chemistry involved in these modern steel processes. The reactions which in fact take place at the high temperatures employed are not to be explained with a little cheap stoichiometry. The effects of manganese, nitrogen, sodium, etc., in the BESSEMER and HEATON processes, are still highly enigmatical. But there are numerous skillful students at work upon the subject, spurred by enthusiasm and rivalry, and supported by an amount of capital which perhaps could not be commanded for any other variety of scientific investigation. We may therefore expect to be further enlightened at no distant day.

THE SAN FRANCISO MINT.

We expressed last week our regret at the fact that the change in the directorship of the United States Mint had not resulted in the appointment of a thoroughly competent scientific man to that position. The course which has been pursued in the matter of the San Francisco branch mint has given us no less dissatisfaction. This is really the most important establishment of the kind in the country, since its coinage is the greatest. Yet the new administration has removed its most important officers (except the Superintendent) to make way for appointees who are, to say the least, not equal in capacity and experience to those whom they supplant.

The case of Mr. MARTIN, assayer, seems to us peculiarly aggravated. This gentleman was brought up in the mint service. He is one of the most thoroughly trained officers in that department. For years he was an assistant of Dr. TORREY, in the U. S. Assay Office in this city: and when he was sent to San Francisco, the appointment was regarded as a well-earned promotion in the service to which he had given his life. In the case of the removal of Mr. LINDEMANN, the administration can at least plead that he made himself improperly conspicuous as a Democratic partizan; and it his office is to be filled by a politician, no doubt it is well that it should be filled by a politician of the dominant stripe. But Mr. MARTIN has never been anything else than an ardent, thorough Republican; and though this fact has nothing to do with his qualifications for the place he held in the mint, it removes the last vestige of excuse for his wanton removal. If General GRANT wishes to secure honesty and economy in the conduct of public affairs, he should never allow himself to remove upright and skillful officers, after years of faithful service.

Mr. MARTIN'S successor we do not assail. He has been assayer at Denver, Colorado, where the business is very light indeed; but he may possibly have built up out of such scanty materials an experience sufficient to qualify him for his new position. Better than his predecessor he cannot well be; and therefore he should not have been appointed.

The President is reported to be worn out with the importunity of office-seekers, and to find it necessary, in many cases, to turn out good men for the sake of hungry applicants. We think he might relieve himself of much trouble, and do the country a great benefit, by resolving firmly, once for all, *to make no changes that are not improvements*. The people will forgive mistakes of judgment; they will acquiesce in appointments dictated by party necessities, when the public service does not suffer; but all men should unite to condemn changes which deprive us of quiet and efficient servants, and saddle upon us noisy beggars.

GUAYANA.

Dr. STEVENS, our industrious and intelligent correspondent from the South American gold field, sends us two letters, the first of which we publish this week, and which probably contain more precise information of a portion of the State of Venezuela than can be found elsewhere. He has taken great pains to obtain his data from original sources, penetrating the forests for leagues, and measuring the mountain heights with a large pocket aneroid barometer.

Attention is now being directed to this newly-discovered portion of the gold field, and several companies have been found to work the mines.

Other companies are expected from England and Europe, with machinery and capital, to commence operations in the older portions of the gold regions. We are informed that there is a decided *furore* among the people of the country, and that the woods are all divided into "picas" or grants, the boundaries of which are marked with paths cut through the forest. This may be a good way to stake off undeveloped claims; but it has the disadvantage, that as soon as the claims are actually worked, the boundaries must disappear.

Illness of Dr. Raymond.

We regret to say that Dr. RAYMOND, the editor of this JOURNAL, has been seriously indisposed, although now in a fair way of recovery. During his absence we venture to insert the following from the *Stockholder* (New York), although we well know that if he were able to exercise his wonted editorial supervision of these columns he would unquestionably expunge it.

"We quote Mr. RAYMOND with great pleasure and, we trust, to the advantage of our readers. His first report to the Secretary of the Treasury, to which we have heretofore referred, so far as it goes, is very satisfactory. Mr. RAYMOND fills the place of Mining Commissioner.°°°°Mr. R. had good intellect, to start with—his occupations have been in the line of his present office, and moreover he has preserved amid the temptations which beset life in New York, and life everywhere, a sturdy regard for truth, the indispensable element in character which makes a man really valuable."

Improvement in the Volumetric Analysis of Alloys of Silver.

Prof. STAS, to whose researches chemists are so much indebted, has published a modification of GAY LUSSAC'S method of estimating silver in the wet way. In the ordinary process a standard solution of salt is employed, but as the precipitated chloride of silver is soluble in a solution of salt, it is impossible to carry out this principle to the minute accuracy which is sometimes required. M. STAS has now discovered that by substituting a bromide for a chloride in precipitating silver, this error may be absolutely removed.—*Quarterly Journal of Science (London.)*

NEW PUBLICATIONS.

REPORT OF THE DIRECTORS OF THE MORRIS CANAL AND BANKING COMPANY. Jersey City, 1869.

This report covers the affairs of the company for the fiscal year ending February 27. According to the statements it contains, the total earnings of the canal, during a navigation season of thirty-six weeks, were $423,476 30, and the current expenses $236,385 87, leaving as net earnings $187,090 43. A dividend of ten per cent. in twenty-year scrip has been declared upon the preferred stock, but money dividends there are none; since the items of interest on bonds, tribute due the State of New Jersey ($25,000 per annum), etc., swallow up all but $37,348 98 of the profits of the year. The directors say:]

"The competition for coal-tonnage which existed during the previous season, between some of the competing companies, was still in force at the opening of navigation, thus rendering it necessary that we should make equally low rates for transportation, which were continued until the first of September. In the early part of the month of July a general strike took place among the miners of the coal regions, which continued for more than seven weeks, causing an almost entire suspension of the coal trade and a consequent reduction of the tonnage upon the canal. After work was resumed by the miners, the trade gradually revived, and we were enabled to obtain rates of transportation which were more remunerative than before, but not sufficient to compensate for the loss which had occurred during the strike.

TONNAGE.

"I. COAL.—The coal tonnage of the canal for the year 1868 was as follows:

Received from the Lehigh Canal	161,828 tons
" " " Railroad at Pt. Delaware	107,387 tons
" " " Railroad at Pt. Washington	80,977 tons
Total coal tonnage	350,192 tons

of which amount 247,458 tons came to tide-water, and the balance, 102,734 tons, was delivered on the line of canal west of Newark.

"II. ORE.—The total amount of ore transported on the canal was 369,672 tons; of this amount, 120,603 tons crossed the Delaware River into the Lehigh Valley, and 56,044 tons were transhipped to the Warren Railroad at Port Washington, leaving 93,025 tons belonging strictly to the way trade of the canal.

"III. TOTAL.—The total tonnage of the canal was 744,412 tons, equivalent to 44,989,737 tons carried one mile. The decrease in the total tonnage from that of 1867 is 78,507 tons."

Experiments tried with Bessemer steel, instead of iron rails upon two of the planes, have resulted successfully. The wear is almost imperceptible upon them, while the iron rails, laid at the same time (in the winter of 1867-8) are half worn out already.

The reports of the Pewabic and Franklin Companies, Lake Superior, issued March 1869, are at hand. The Franklin Mine is improving, the fathom of ground yielding 337½ lbs. ingot copper against 279½ lbs. last year. The actual percentage of ingot copper to the weight of rock mined or crushed is not explicitly stated, but it is easy to calculate that the 4,350 cubic fathoms stoped, weighing 79,880 tons, as taken from the mine, and 43,028 tons after sorting for the mill, yielded in ingot copper less than one per cent. of their original weight, and about 1.18 per cent. of the weight actually crushed. The expenditures of the year (partly construction account) have slightly exceeded the receipts. The sales of copper amount to $241,433 47.

The directors of the Pewabic Company say that "taking into consideration the low price of copper and the general depression of business, the result of last year's operations is not altogether unsatisfactory." There have been taken from the mine 2,467 cubic fathoms of rock, the aggregate weight of which is not given, but probably ranges between 45,000 and 47,000 tons. The amount crushed was 42,494 tons, which yielded 1,043,523 lbs. of ingot copper, or about 1.6 per cent. The account given of the performance of the Ball stamps is quite interesting. As the main stopes of this mine are now more than a thousand feet below the surface, the man-engine is employed for the transportation of workmen in and out; and the directors say of it:

"The man-engine is a valuable auxiliary to the mine plant. By its aid the miners are taken to the surface from the 120-fathom level in ten minutes, thus saving much time and strength that would be lost in climbing by the ordinary method of ladders. For this reason the miners prefer to work here, rather than in other deep mines which are not supplied with this machinery."

The report of Mr. J. P. WHITNEY, Treasurer of the Incas Silver Mining and Bullion Consolidated Mining Companies, of Colorado, to the stockholders, is hopeful, though perhaps a little apologetic in tone. It is evident that the rose-colored expectations of investors must be toned down a little before they can be satisfied. Still, Mr. WHITNEY himself could be toned down a good deal without injuring his reputation for common sense. His estimate that 10,000 tons of argentiferous galena could be stripped from the surface of a single vein without going below a depth of fifteen feet; that the said argentiferous galena would be worth "from 10 to 250 ounces per ton," *ergo* at least $50 silver per ton; and that this ore will bear $35 per ton for mining and $20 for reduction to lead on the spot, then a hundred miles of teaming to the railroad, and freight to St. Louis, for the extraction of silver, making an aggregate expense of $175 per ton, is wild. There is not a mine of argentiferous galena in the world, and there never was one, that could be permanently carried on under such a burden of expense. Still, if Mr. WHITNEY has a vein or veins that will furnish, without robbery or too much sorting, ore containing 67 per cent. of lead and $50 silver per ton, he has a good thing; and can afford to wait for railroads and lower prices. The report is accompanied with a very handsome lithographic map of the mountain on which the numerous veins of the two companies crop out. The tunnel which they are jointly prosecuting will cut the veins at a depth exceeding a thousand feet. The locality is evidently favorable for a cheap adit-system of mining.

ANSWERS TO CORRESPONDENTS.

S. K., OF LA.—It takes a much more powerful steam engine to make ice than to simply cool the air, in cases where the ice or cooling machine works on the principle of evaporation in vacuo, by means of an air-pump. It must be taken into consideration that the latent heat to be abstracted from water in order to convert it into ice is 140 units, or, in other words, that the conversion of one pound of water at 32 deg. into ice at 32 deg., requires the abstraction of the same amount of heat as the cooling of 140 pounds of water from 33 deg. to 32 deg. As, moreover, the specific heat of water is about three times greater than that of air, this abstraction of heat will be equal to the cooling of 3 by 140, or 420 pounds of air one degree, corresponding to nearly 350 cubic feet of air. Consequently, to cool the air in a room from 60 deg. to 30 deg. requires, for every 350 cubic feet of air the room may contain, an amount of cold-producing power equivalent to the freezing of 30 pounds of water.

PHOT, OF N. Y.—The silvering powder used to silver brass, copper, etc., by simple friction, is made by mixing carefully one part of chloride of silver with three parts of potassa, previously dried by making it nearly red hot; one part Paris white and a little more than one part of common salt. The brass surface is well cleaned and polished, moistened with a solution of common salt, and the powder rubbed on till the metallic surface is well coated with silver. As the silver is very thin, it is well, after washing and drying it carefully, to varnish it with a colorless varnish like damar, well diluted with turpentine. This is the way thermometer scales and similar objects are treated.

A. R. LEDOUR.—If the color has been destroyed by nitric acid, it cannot be restored. A few weeks ago we had some black clothes literally sprinkled with diluted nitric acid, and the color entirely discharged, or at least reduced to a dirty orange yellow. By washing the spots first with a solution of salt of tartar, and then very liberally with pure water, the acid was neutralized, and, to a certain extent, removed. The spots were then colored with good black ink, and the articles looked pretty well.

P. O., OF BROOKLYN.—Your fears about your city and New York, in regard to the settling of the piers of the bridge to be built between the two cities are entirely groundless, although such an occurrence would be awful to contemplate. The foundation will not be laid in the soft earth, but but below it on the solid granite rock, which may be reached at the Brooklyn side at a depth of nearly 100 feet, and at the New York side at a depth of 130 feet.

E. N., OF PENN.—Asks: "If mercury freezes at 40 deg., how do chemists manage to measure temperatures below that point?" Thermometers for measuring very low temperatures are filled with ether or alcohol, chiefly the latter. *Pure* alcohol, or, as it is frequently called, absolute alcohol, does not freeze at any temperature likely to be encountered during the course of ordinary experiments on low temperatures—say 200 deg. below zero of Fahrenheit.

A. K., OF BOSTON.—Bisulphide of carbon is the analogue to carbonic acid. When burning carbon in oxygen it combines with two atoms of it, when burning carbon in sulphur vapor, it also combines with two atoms of sulphur; the respective formulæ, therefore, are CO_2 and CS_2. The first becomes liquid only under great pressure and cold; the second is liquid at the common atmospheric pressure and temperature, but it is very volatile.

DENTIST, OF PHILADELPHIA.—Your supposition that selenium, being so very similar to sulphur, may be used for vulcanizing rubber is correct. It makes a very superior vulcanite, but the process has been patented by a New York dentist, we believe. The scarcity and high price of selenium however, must form a grave objection to its extended use.

S. B., OF NEWARK.—Your note is received; it is impossible to make a correct estimate of the actual labor performed by your steam engine by the pressure of steam in boiler, size and velocity of piston; actual tests with the indicator are required. We propose to treat this subject shortly in our columns, and will then give a full answer to your inquiries.

ARTIST, N. Y.—The ingenious way the spiritual portraits may be, and have been made, you will find fully explained in the June number of the MANUFACTURER AND BUILDER.

Separation of Zinc from Argentiferous Alloys of Lead.

Mr. H. Roux, of Marseilles, has patented a new process for separating the zinc from the argentiferous alloys obtained in the separation of silver from argentiferous lead by means of zinc, and improvements in the furnaces for that purpose. This invention consists (when the argentiferous alloy has been obtained by Parke's process in the separation of silver from lead by zinc) in submitting the said alloy to successive liquation processes, so as to remove therefrom the greater portion of the lead combined therewith. This product, broken up into small fragments and mixed with its own weight of litharge, is thrown on to the bed of a reverberatory furnace. The bed of the furnace rests upon two cast-iron plates, made to incline toward each other in the center. It is formed of fire-bricks cemented together by a paste composed of fire-clay and powdered calcined bones, or it may be formed by placing on the plates a mixture of fire-clay and graphite. The before-mentioned alloy having been charged into the furnace, it is covered with a small quantity of litharge, and it is heated to a dark red heat. The reactions then commence; one portion of the litharge is soon reduced by the zinc, which is transformed into oxide, which remains floating in the molten mass, while the lead produced absorbs all the silver, and is caused to run off through an outlet passage into a receptacle placed outside the furnace to receive it. As soon as the running off of the lead ceases, the reaction is complete, and the aperture of the outlet passage is closed. The furnace is then well heated, so as to liquify perfectly the litharge, as also the oxide of zinc and all foreign matters, such as the oxides of copper, iron, and antimony, which dissolve. The outlet passage is then again opened, and the remaining quantity of lead is run off, the arrival of the litharge in the passage indicating that all the lead has been eliminated. The litharge is then allowed to flow off separately, either on the floor of the workshop or into boilers arranged to receive it. The rich lead is then subjected to the cupellation process, while the impure litharge is treated in the cupola furnace for separating the lead contained therein. In cases where the argentiferous alloy contains very large proportions of zinc it is advisable to increase the dose of litharge, in order that the latter may be present in sufficient proportion to sufficiently dissolve the oxide of zinc, and to form a sufficiently liquid compound to allow the globules of lead to traverse it readily.

Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

THE CHEMICAL OPERATIONS—XIV.

BY PROF. G. HINRICHS, OF THE IOWA STATE UNIVERSITY.

D. ON CHARCOAL.

Good compact charcoal is sawed or broken into pieces a few inches wide and several inches in length; at least one side is cut smooth with a knife to receive the substances to be heated. It is, of course, much more neat to prepare blocks squared on all sides.

All such fusions as cannot be performed on the platinum foil, or on the wire, because the platinum might be injured (see § 70), are effected upon charcoal; but the two principal operations on the charcoal block are the production of metallic globules and the production of incrustations or coatings. These will require more special consideration.

Charcoal is used for these purposes, because it is not only infusible but also a *bad conductor* of heat, so that the sample heated does not lose its temperature by conduction. Its unequalled cheapness (suitable pieces may be had almost without cost in any tin shop) enables us to throw the blocks away after use—thus saving all the trouble of cleaning, etc., necessary when platinum is used instead.

120. Put a small piece (about as large as a pin's head) of lead on the smooth charcoal surface, or in a very slight depression hollowed in this surface. Heat it on the charcoal by the oxidizing flame. The lead will rapidly fuse, and a *yellow* oval will form around it, having its greatest extent in the direction of the flame. Such a coating is called an *incrustation;* it is, of course, the oxide of the heated metal, in this case *lead oxide* (see § 99.) The formation of this incrustation is as follows: the fused lead volatilizes and *burns* to yellow oxide, which, not being volatile, is deposited near the remaining metal; but as it is also torn along by the blast in the direction of the flame, the incrustation will be longest in that direction.

Making use of the terms here introduced, we may say from this experiment that lead fuses and volatilizes readily, oxidizes to a yellow, non-volatile oxide, which latter forms a yellow incrustation on charcoal.

121. Expose now this same incrustation to the inner or *reducing* flame: innumerable small globules of lead will be observed in the place previously occupied by the incrustation. In order to get a larger globule, put a little litharge (carefully kept in one dense mass by means of the blade of of a pen-knife) on the charcoal, and heat this in the same way with a steady reduction flame. By the excessive heat of the flame, however, enough lead will volatilize to reach the oxidizing flame, so that, in this case also, a yellow incrustation will be observed.

122. The reducing power of the flame is greatly assisted by mixing the substance intimately with about an equal portion of soda. Small quantities may conveniently be mixed by the pen-knife on smooth, clean writing-paper (if no small mortar is at hand.)

123. A small piece of zinc heated in the manner just described for lead burns with a greenish flame, forming a fine large incrustation, which is yellow while hot, but which turns white upon cooling; as soon as it is exposed to the flame, or is otherwise heated, it again turns yellow, always quickly reverting to white upon cooling.

By taking a small piece of zinc sulphate (white vitriol § 55,) we shall be unable to produce a metallic globule, but still get a very fine zinc incrustation (*i. e.*, an incrustation which is yellow while hot, white when cold.) The reason is that zinc is so volatile that it passes into the outer flame as vapor as fast as it reduced.

124. Put on this zinc incrustation one drop of *cobalt nitrate* (prepared by dissolving the metal cobalt in nitric acid and diluting with water so as to produce a limpid, pale rose-colored solution.) Then heat the moistened incrustation again; it thereby turns to a fine *green color*, thus affording a further characteristic property of zinc. This green substance is composed of zinc oxide and cobalt oxide.

125. These experiments represent the most important blow-pipe operations, commonly used as blow-pipe tests, namely: reduction to a metallic globule, formation of an incrustation, change of the latter by cobalt nitrate. These are operations easily performed and highly characteristic for many substances. That ignition, fusing, fluxing, flame coloration can also be done on charcoal, and at times must so be done, has already been said. Borax beads are also readily obtained on charcoal.

In conclusion, we would most earnestly recommend to every student who has the opportunity to practice at all, to bestow a good portion of his time on the blow-pipe; for this little instrument is indeed in itself a laboratory of equal value in chemical science, in the determination of minerals, and in the arts.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

THE ASSAY OF SILVER BY THE WET PROCESS.

BY PROF. H. DUSSAUCE, CHEMIST.

III.

PRESERVATION OF THE NORMAL SOLUTION OF SALT.

The most convenient vessel for holding the normal solution of salt is one of glass, as this material cannot change the title. A black glass demijohn having a capacity of 50 or 60 litres is the best. It is gauged in litres or kilogrammes of water; a paper scale being applied to the surface indicates the quantity of liquid it contains. It is closed by a hydraulic sheet iron valve, the inside of which is of glass.

The solution is drawn off by a syphon with a cock; the syphon can be made of metal, as it is not so easily broken as glass.

APPLICATION OF THE ABOVE PROCESS TO DETERMINE THE TITLE OF AN ALLOY OF SILVER.

Let us suppose a monetary alloy, the mean title of which is 900 thousandths, but which may vary from 897 to 903.

Take one gramme and dissolve it in a bottle with about 10 grammes of pure nitric acid of 32° B., and to aid the solution heat the bottle in a water bath. The metal being dissolved and the bottle cooled, blow off the nitrous vapors with a little blower.

The burette is filled with the normal solution of salt and tared, and then pour in about 90 grammes in the solution of the alloy, say 89.85 grammes. After shaking the liquor, pour in a cubic centimetre of the normal solution of salt, representing 1-1000th of silver. If there is a precipitate, shake, and add again 1-1000th of salt, and so on until the last thousandth does not produce a precipitate. Let us suppose this to be the fourth. It is not denoted, since it has produced no effect, and we take only half of the third, which has been only partly necessary. The title of the alloy is consequently equal to 1-2 a thousandth, to 898.5 2.5=901.

If a more exact title has to be obtained, proceed by half-thousandths, until the last half thousandth does not precipitate; and, to avoid all confusion, distinguish on a paper the thousanths of salt by marking them with the sign +, and to the thousandths of nitrate of silver give the sign —.

In our example, after the addition of 4-1000ths of salt, the last of which produced no precipitate, add 1 1-2 thousandths of nitrate of silver, which will destroy 1 1-2 thousandths of salt, and let the liquor become clear. If a new 1-2 thousandth of nitrate of silver does not produce a precipitate it is not counted. From this we conclude that the quantity of nitrate of silver necessary to destroy the excess of salt is greater than 1-1000th and less than 1 1-2, that is, that within 1-4 thousandth it is equal to 1 1-4. Thus the number is 4—1.25=2.75. The title of the alloy is then 898.50+2.75=901.25.

Another example.—Everything being the same as above, except that the first thousandth does not produce a precipitate, it is a proof that too much of the normal solution has been used. Add 1-1000th of silver and shake; then add 1-1000th of silver, which produces a precipitate. The succeeding 1-1000 has no action. The title of the alloy is equal to 898.5—0.5=898. To be more exact, destroy the two last thousandths of silver by 2-1000ths of salt and add 1-2 a thousandth of silver. A precipitate appears, but another 1-2 thousandth has no action. The title is then 898 50—0.25=898.25.

This process, which it is unnecessary to explain further, because we can apply to the several parts of a process which we shall describe hereafter, is general, and gives exactly the title of an alloy of which the composition is approximately known. This approximation can be made by a first rough assay.

[TO BE CONTINUED.]

AMERICAN INSTITUTE.

Proceedings of the Polytechnic Association.

MEETING HELD AT THE ROOMS OF THE ASSOCIATION April 15, 1869.

PROF. S. D. TILLMAN, IN THE CHAIR.

CEMENT FOR BOTTLES CONTAINING VOLATILE LIQUIDS.

The chairman read the following scientific notes:

Chemists who have used a luting of melted sulphur for sealing bottles containing ether, benzole, bisulphide of carbon, and other volatile liquids will find it much more convenient and quite as effective to mix finely ground litharge and concentrated glycerine and apply the mixture as they would paint around the cork or stopper. The coating soon becomes extremely hard and air-proof, but it can be easily removed with a knife.

A NEW WHITE PAINT.

At a recent meeting of the French Academy of Sciences, M. Sace called attention to the fact that tungstate of baryta forms an excellent white paint which has as good a tone and depth as white lead, and has the advantage of not becoming blackened by exposure to the atmosphere. Sulphate of baryta or heavy spar has of late been used to adulterate white lead. Tungsten or wolfram is a metal often found with tin, and its production is cheaper now than formerly

THE YAK.

This animal, of the bovine family, inhabiting Thibet, has been subjected to a series of experiments in France for the purpose of ascertaining whether its propagation can be made profitable. Some years since the French Consul-General of Shanghai brought home a herd of yaks, which were placed under the charge of the Societe d'Acclimation, which at its last sitting offered several prizes for rearing and training this animal. The yak combines some of the characteristics of several domestic animals. It resembles the ox, but has a bushy tail like the horse; its hair curls like some kinds of wool, and it indulges in a peculiar grunt, which might easily be mistaken for that of a pig. The wandering tribes of Tartars hold the yak of high value, because it is a sure-footed beast of burden, and the female yields a rich milk, the butter from which has become quite an article of merchandise. The hair is made into ropes and cloth, and its skin is converted into clothing. The bushy tail is extensively used in India as a brush. Its horns curve outward from the occipital ridge, and are sometimes as white as ivory. The meat of the yak has a flavor somewhat resembling that of venison, which is not diminished by domestication and acclimatization. The wild yak of Thibet is found near the snow line of the mountains, and it is not improbable that this animal would be found of great use if introduced into the mountain regions of the western part of the United States. The domestic animal is generally about four feet high and seven feet long.

CARBOLIC ACID AS A THERAPUTIC AGENT.

JOSEPH HIRSH, in a paper recently read before the Chicago College of Pharmacy, gives an account of a series of experiments made by him, showing the power of carbolic acid to coagulate albumen, and adds some remarks upon the effect of this acid on the human system, the importance of which can hardly be overestimated. The application of a concentrated solution of the acid to the skin produced in a short time a white opaque spot of horny aspect, which soon peeled off. The same spot, produced on a highly sensitive part of the epidermis, as on the tongue, at once loses its sensitiveness, and a feeling as of the presence of a foreign body as a coating is experienced. In both cases the opacity of the spot, by its resemblance to the opaque coagulated albumen, at once reveals the nature of the change produced by the acid. The albumen of the blood, which, through the numberless ramifications of the blood-vessels, is carried to the skin for its nourishment, becomes coagulated. In this state it is solid, precluding the motion of liquids of its own kind within its substance, and with this motion, nourishment and life. As lifeless, dead matter, the skin must necessarily peel off; it must, with the loss of vitality, be deprived of all prerogatives of life and feeling, as noticed above. Taking the coagulation of albumen as the immediate effect of applying carbolic acid to any organic substance, we shall find no difficulty in explaining the suspension of life without its complete extinction in the microscopical beings known as contagion.

They contain, no matter whether they are animalculæ or minute plants (a question not definitely settled), albumen; blood albumen in the former case, and vegetable in the second. Here the carbolic acid coagulating the albumen on the surface of the corpuscle, forms an insoluble envelope, impenetrable to air, and to further quantities of carbolic acid, which in this manner forms an obstacle to the entrance of itself into the interior of the body. This retains in its centre a minute portion unchanged, full of life, capable of increase under favorable circumstances, and protected from external influences by its coating of coagulated albumen. Such a corpuscle acted on by carbolic acid, may be represented by an egg exposed to boiling water for a few seconds. The coagulating influence of heat affects the superficial layer of albumen, which still incloses the rest of the egg in its raw state. All substances or processes producing the same coagulating effect upon albumen do in reality exert the same destructive influence upon contagion and miasma, but do not possess those necessary properties which qualifies them for this purpose as well as carbolic acid. Heat, which coagulates albumen, has been used successfully in the disinfection of clothing and places infested with the poison of cholera, yellow fever, &c., but while we can turn high pressure or even superheated steam into a room, a ship, &c., we cannot subject a cholera patient, or an animal infected with the cattle plague, to so high a temperature as to destroy the poison lurking within them; and if in diluted carbolic acid we have a remedy which, with such coagulation, will destroy the activity of the contagion without interfering with the process of life in the patient, we have found a desideratum which is at once a boon to mankind and a victory of science important beyond comparison. The use of other chemicals, as the mineral acids, and their salts, which coagulate albumen, is precluded in contagious diseases, under the same circumstances, and for similar reasons, under which superheated steam is unavailable. On the other hand, carbanic acid greatly diluted exerts a barely perceptible influence upon the vital processes of the largest animals, while its powers of destroying sporules is almost equal to that of the concentrated acid. This apparent anomaly is easily explained on comparing its action to the parallel coagulation of a highly diluted solution of albumen by one similarly diluted of the acid. The diluted solution is as completely coagulated as a dense one; but the dilution of the liquid places the particles of albumen at such great distances from each other that they can no longer form a coherent mass after coagulation, but remain separately suspended in the liquid, rendering it opaque and milky in appearance. This liquid, although charged with insoluble albumen, will filter through paper, as also through the pores of all tissues of the animal organism. The dilute carbolic acid, introduced into the system will, in the same manner, coagulate the albumen and sporules it meets on its passage, in such subdivision that the coagulum can no longer form a dense coherent coating, as in the case during the application of the concentrated acid, while the minute particles of this coagulum, after filtering through the animal tissue, do not oppose an obstacle to the free passage of greater quantities of the carbolic acids or of the vital fluids. On the other hand, the sporules constituting the contagion are so minute themselves that the limited sphere of action of the diluted acid still embraces a complete sporule, or a number of them, which thus have their vitality suspended as completely as by the concentrated acid. This great divisibility (irrespective of the volubilty of the acid) prevents its entire neutralization by the albumen of the larger organism to the exclusion of that of the sporules, the albumen being a base of no great energy, especially if linked to an acid as faint as carbolic. Nevertheless, for a complete curative effect the dose must be repeated, as the acid owns, in common with all other drugs, the property that the limit of its sphere of action is proportionate to its amount.

NEW LIFE PRESERVER.

Mr. JAMES WESTON exhibited several ingenious applications of wood cut into veneer. Amongst the rest was a life preserver, which consisted of eight hollow cylinders formed of three layers of veneer cemented together, the grain of the wood in the middle layer being arranged at right angles to the grain of the other layers. Each cylinder is covered with a thin sheet of guttapercha, which makes them absolutely waterproof. Four of these cylinders are inclosed in a canvas case, and two cases are so united by strips that a set of four cylinders may be worn in front of the chest, while the other set of four lie on the back. Each cylinder is about 6 inches long by 2 3-4 inches in diameter, thus containing about 34 1-2 cubic inches, or about 1-6 of a cubic foot for the eight cylinders. As the weight was stated by the inventor to be about 1 3-4 pounds, the buoyant power of the life preserver is equal to about 8 1-2 pounds—an amount amply sufficient to keep the face well out of the water if the wearer assumes a proper position. These life-preservers can be made for about $6 or $7, and the great advantage of this life-preserver over those made of rubber is that it cannot by any possibility be punctured with a pin, or by coming in contact with rock or any sharp substance, so liable to be met with in escaping from a wreck or in landing. If one should be punctured, there are seven more left. It can also be very cheaply made, and takes up less room than cork, and will last a hundred years. The same method of construction may be applied to stools, chairs, settees and life boats, so as to increase their buoyancy.

One other application was the formation of veneer hubs for wheels. Mr. WESTON stated that a well-known carriage house in this city would test the hubs on a carriage this summer. There was also exhibited a model of a railroad car-wheel made from veneer one-eighth of an inch thick, the grain of the wood in each alternate layer running crosswise to the preceeding one. The layers are arranged from the outside towards the center, each layer being cemented to the preceeding one, and the whole being formed into a solid and very compact mass by the pressure produced by forcibly driving a plug into the central hole. The rim of the car-wheel might be either steel or iron; thus would be obtained what has long been a desideratum—a noiseless wheel for the sleeping-cars of our railroads. Mr. WESTON stated that he believed it would last longer and answer the purpose better than any other car-wheel ever made. It was not claimed that this crossing of the grain of the wood was a new thing. The veneers need not be more than one-eighth of an inch thick, and it will be readily seen that a wheel may be made of any size in this manner.

Mr. WESTON said he had made a veneer hat for himself, and also stated that he believed a baloon would yet be constructed of veneer, combining lightness, strength and durability. The latter statement, however, may be regarded as exceedingly questionable.

THE BEES AND THE WEATHER.

Dr. LAMBERT addressed the Association upon a subject to which he had given great attention, namely: the possibility of predicting the character of an approaching winter from the labors of the bees during the preceding season. He held it to be a fallacy that the winter must be very cold when cabbages were scarce in summer; and he who judges of the weather by the fullness of the moon is a fool. But the rigor of the approaching winter may be estimated by the amount of honey stored by the bees during their working season. If they lay up a large store of honey, an open winter is sure to follow. If the honey crop is small, the winter will be cold. Last year the bees had garnered less honey than during any season for 23 years, and the winter, from the middle of November to the middle of April, was unusually severe. The average temperature was several degrees lower than had been known for more than 20 years (except in five winters), and as he had watched the industrious insects during all that time, and had rarely known the sign to fail, he considered the bee as good an indicator as the southward-flying goose, the river-swimming-squirrel, or any other of the thousand living things whose movements, according to the weather-wise, foretell the state of the coming season. In December last he had predicted an early closing of the Hudson; but the navigators of that river, taking their cue from the moon, refused to respect his judgment. He had been watching the bees. On the 11th of that month the ice was 16 inches thick in the stream, and it cost the owners of one steamer $3,000 to cut her way through to Albany. This result did not follow because nature cared anything about the bees, but because the same causes which cut short the honey crop during the summer conspired to produce a cold winter. The same thing occurs in the case of the currant. If the currant blossoms drop, the summer will be cool and damp. Acid fruits are good when the weather is dry and warm, and it is so arranged that when the summer is to be damp and cool, such fruits shall be scarce. Not because nature cares particularly about our wants and comforts, but because the same causes conspire to produce these different effects.

Mr. PHIN.—I have given some attention to bees. Last year, in certain parts of the country, the bees stored very large quantities of honey, and in these regions the winter was similar in character to the winter as it existed elsewhere. By what rule would the inhabitants of these districts prophecy the character of the approaching winter?

Dr. LAMBERT.—These were exceptional regions. I speak of this indication merely as a general rule. During last winter honey was very scarce and dear. That is the test. Washington market is the best barometer.

Mr. PHIN.—Perhaps so, but I think you will find the exceptions pretty general too. Moreover, how would it be if the farmers throughout the country were to take to the general production of some honey-producing plant, such as buckwheat?

Mr. FISHER here related the old story of the philosopher, the boy and the ram, a story which has been told of almost every philosopher of eminence. In this case Mr. FISHER fathered the story upon NEWTON.

LECTURE ON LIGHT.

Dr. VANDER WEYDE gave a very interesting lecture on light and the means of producing achromatism in the combinations of lenses used in telescopes and microscopes.

Dr. PARMELEE read a letter from Dr. JULIUS G. POBLE, in which was described a small collection of minerals presented by Dr. P. to the Institute.

A Monster Nugget.

The telegraph brings the intelligence that a gold nugget, weighing not less than 200 lbs. troy, has been found in Victoria. It is doubtful whether so large a quantity of the precious metal has ever been found before in one mass. The great nugget of 1868 weighed only 146 lbs. It is noticeable that all these great lumps of gold have been found in Australia. In 1730 a nugget, thought at that time to be immense, was turned up at Peru, but it weighed not more than 60 lbs.

The Marquette *Mining Journal* contains an account of a most distressing accident that occurred at the Superior Mines, in which three Swedish miners were horribly crushed and mangled between a 100 tons weight of falling ore. The accident resulted from a premature explosion of a blast on the upper level. The names of the sufferers are not reported.

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Manufacturers who have not yet communicated with us, will please forward a Descriptive and Price List of such staple articles as are manufactured by them, that our customers may be assured that we make no addition to your standard Price List. may1-tf

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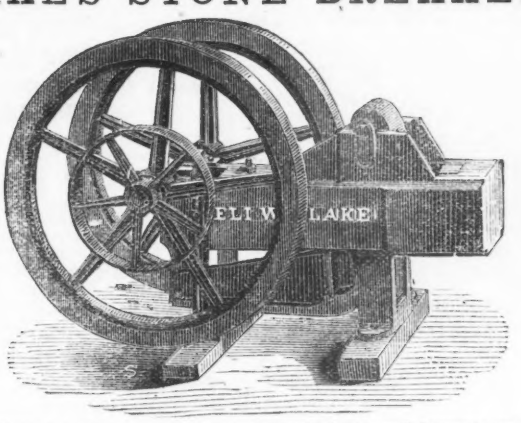

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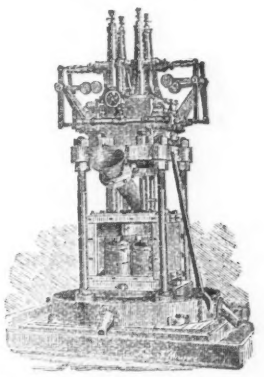
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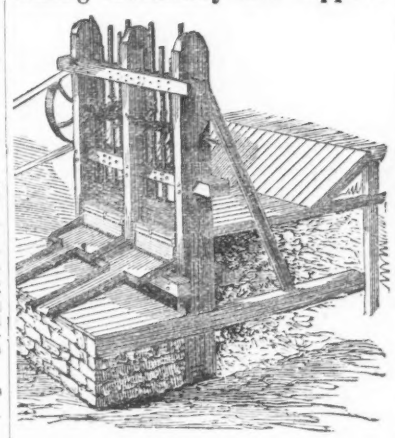
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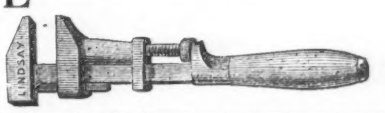

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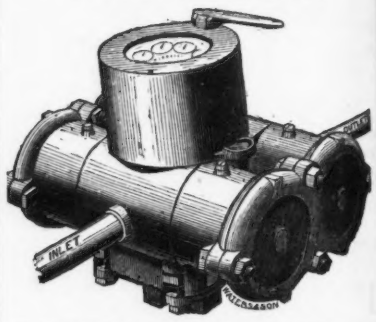

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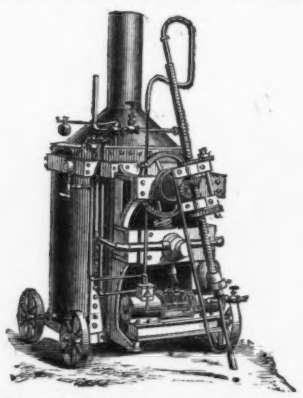

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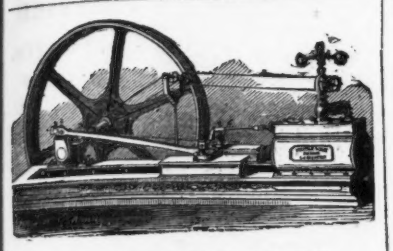

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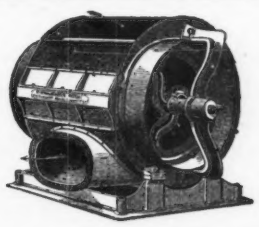

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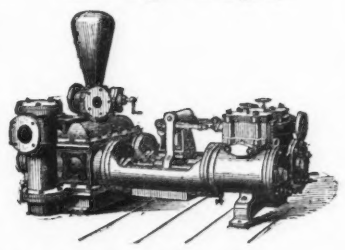

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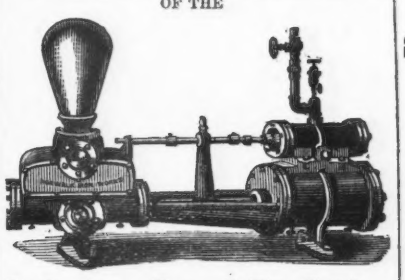

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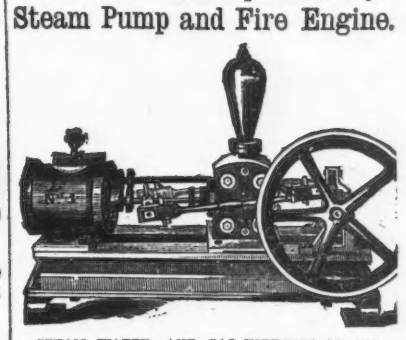

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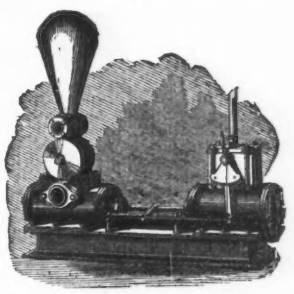

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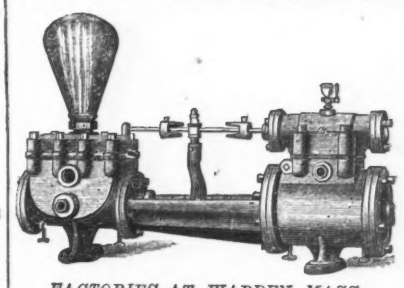

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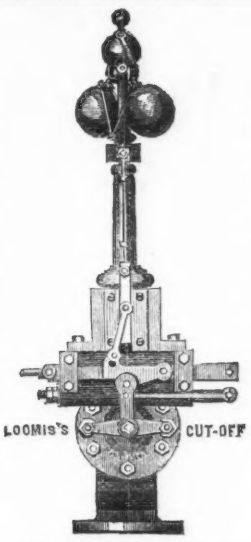

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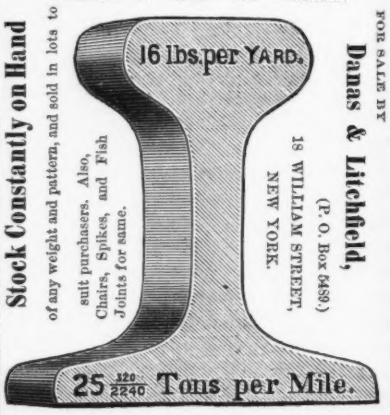

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